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THE Sanitary Inspector.

A MONTHLY JOURNAL,

DEVOTED TO PERSONAL AND PUBLIC HYGIENE.

PUBLISHED BY THE MAINE STATE BOARD OF HEALTH.

A. G. YOUNG, M. D., - Secretary of the Board, - Editor.

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BOSTON MEDICAL
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SANITARY INSPECTOR.

VOL. V. NO. 1. JULY, 1891. 25 CENTS A YEAR.

Notes, Sanitary and Otherwise.

The time for notifying this office of an outbreak of infectious disease is just when it occurs.

Last year the local boards were, generally, remarkably prompt in reporting the results of the annual meetings. There will be a chance for as good a record this year, providing some of the boards hurry up.

Our readers will notice a change in the method of mailing this little journal. A figure after the subscriber's name represents the volume up to which, or into which, he has paid.

Wellesley College has made a notable departure and a very excellent one in establishing a department of Domestic Science. Its young lady graduates are now to have a chance to learn such useful studies as the sanitary arrangements of the house, the chemistry of food and cooking, proper clothing, the art of housekeeping, domestic economy, etc.

Lowell, Mass., is one of the many towns that now require physicians to report membranous croup, just as they do diphtheria.

The State Board of Health and Bureau of Vital Statistics in the new State of Washington, composed of five members appointed by the Governor in compliance with an Act of the Legislature approved March 7, 1891, has been organized.

Yes, we should spare that paltry ten minutes a week which the law provides in which to teach our school children lessons of mercy and kindness to animals, though we should watch with jealous eyes propositions to increase the multiplicity of studies in the public schools.

We would suggest that, after the reading of *Black Beauty* in the schools, a paper in a late number of *Nineteenth Century* on the method of shipping cattle from Western Canada to England be taken up, unless the teacher believes that too much familiarity with brutality forms a favorable condition for the growth of unmercifulness.

The grounds that are developing for believing that vaccination is a prophylactic of tuberculosis, appear to be as good, to say the least, as any that the "antis" can show for their objections to vaccination. At the first congress for the study of tuberculosis, Landouzy declared that children that have been vaccinated are less liable to tuberculosis than those who have not had the benefit of vaccination, and now Dochmann comes with evidence that marked improvement sometimes follows in tuberculous patients after vaccination.

A journal published in the interest of household economy in Lucerne, Switzerland offers a prize of 300 francs for the best essay on practical cookery for the sick room.

The arrangements that are making for the International Hygienic Congress in London, in August, foretell a representative gathering from all parts of the world of prominent students and workers in the cause of public health. The congress will hold its sessions from August 10–14.

The sanitary authorities are having an inquiry made as to the cause of the great prevalence of rabies in Austria. During the last ten years from 700 to 800 mad dogs have come to the knowledge of the authorities annually and 3021 persons have been bitten by them in all that time.

According to the late census returns in Europe the population of London is 4,492,707, of Paris, 2,422,969, of Berlin, 1,604,725, of St. Petersberg, 956,226, and of Vienna 840,000.

Another Guilty Town Pump.

A report has been made on an outbreak of typhoid fever in Arundel, England. Of 143 persons attacked, 42 had used water from a certain "town pump." The analysis of the water indicated pollu-

tion. An examination showed there was a leakage into the well probably from the uneven surface of the square where the pump was located, and around which stood pools of dirty water where the fortnightly market was held. The well was closed and there was then a rapid diminution of the epidemic. Before the typhoid fever, there was a remarkable prevalence of diarrhoea.

Summer Resorts.—A Word.

Those whose pecuniary interests center in the summer resort business should remember that one of the greatest dangers impending over it is sanitary carelessness. The health of the summer visitors, while here and after return home, is something in which each hotel keeper and the State as a whole has a money interest. It pays to give them their money's worth of pure air and pure water unalloyed, not to say anything of something to eat. The failure to guard guests from water or air pollution may result in a kind of advertising that is not conducive to prosperity. An outbreak of typhoid fever or other disease, due to sanitary defects, has blasted the prosperity of more than one promising place. There are, in this State, towns and private owners who have taken pains to insure their boarders, as far as possible, against dangers. Outside of the question of equity, this is a paying "card" and, moreover, is a good investment of money for the insurance of business.

A Plea for the Muzzle.

Nine persons were bitten by one mad dog a few days back at Mery-sur-Oise, and have since been admitted to the Pasteur Institute. The owner of the dog, who ran after the animal through the streets, is amongst the number of patients, as well as three members of his family. A little boy was bitten in the head, the remaining victims principally on the arms and legs. So far they are progressing satisfactorily and have already been inoculated several times. There is every reason to hope no fatal result will occur. Here is a matter for the opponents of muzzling to ponder.—*Lancet.*

Sicilian Pigs.

An English consular report from the island of Sicily comes to the rescue of the reputation of an animal much vilified for conditions of life into which man thrusts him. Give the pig a fair chance and he might give sanitary hints to some of his superiors.

"Pigs in certain districts, and especially in the mountainous parts of Sicily are reared in great number; nearly all the the small towns are overrun with them; they are not only useful for food, but act as scavengers to the dirty streets. They are enticed in towns to devour the filthiest food by sprinkling bran over it. In the mountainous districts, where there are oak forests, they are driven up to the high regions to feed on the acorns. The pigs which are thus driven about under the superintendence of boy swineherds, are all ear marked, and speedily become accustomed to their new conditions of life. They soon form among themselves a sort of republican government, and are docile to the calls and windings of the horn of their young guardians, who are clothed in very plain and primitive fashion, and live simply on bread and water, taking out with them every day loaves baked in the ovens of the farm, and precisely in shape such as have been found in the bakers' shops at Pompeii. As before mentioned, the pigs are driven back home at night and housed to avoid disease, and, strange to say, the sheds in which they are housed are scrupulously clean. I have been told that they estabish internally a kind of sanitary jurisdiction, and that a pig which is found internally a delinquent against the sanitary rules is attacked with fury by the rest and capitally executed. At any rate I have looked inside covered pig-sties, made of stone, and capable of holding three or four hundred pigs, and found them dry and clean and very dusty."

The Expense of Typhoid Fever.

Dr. Billings, in speaking with reference to Philadelphia, says that with a constant pure water supply, good sewerage, and clean, smooth streets, the annual death rate should not exceed eighteen a thousand, instead of 22.5, the rate for the past five years, which means that each year there were over 4,000 deaths and 7,000 constant cases of sickness. He therefore finds that about $1,500,000 was lost to the citizens in this way each year, estimating funeral expenses, medicines, attendance, etc., alone, without counting indirect damages due to the loss of labor. The doctor thinks that the reason why these reforms are not made, is because there is too much politics in the government of our cities; that those who seek to direct the cities' affairs are bent more on securing votes than on promoting the public welfare. It is a queer kind of politician who seeks to make votes for himself by an increase of dirt, disorder and disease; yet we have just such men.

Polluted Water for Live Stock.

During the latter part of the summer of 1890, I had occasion to investigate a severe outbreak of disease on a farm in one of the counties of Iowa. The animals, including horses, cattle, and pigs, were all affected in the same way. The local symptoms were largely confined to the throat. There was a swelling, partial paralysis of the walls of the air passages, and painful and difficult breathing. The animals attacked uniformly died after an illness of about two days. The disease I could not recognize as belonging to any of the well defined types with which I was acquainted. Here were horses, cattle and pigs sick and dying with disease showing the same symptoms in all.

There are few if any of the specific forms of disease that spread, as epizoötics, among the widely differing species of domestic animals. I could not classify the disease, and at once set about the task of discovering, if possible, some common source of exposure. The pastures, buildings, and water supply were each in turn subjected to careful scrutiny. The buildings were such as are to be found on ordinary Iowa farms, fairly comfortable and clean. I could find no clue in the quantity or quality of feed that promised to lead to a solution of the difficulty.

On investigation of the water supply, I found that most of the animals on the farm drank from a small creek that run a zigzag course through the premises. The stream was in part supplied from a series of springs, and in ordinary seasons afforded a fair amount of water, which ran, at least, for a portion of its course, over a gravelly bed. The dry summer of 1890, with several previous ones showing an abnormally light rain fall, had so reduced the amount of water that it had ceased to run. On making examination and conducting inquiries, I ascertained that it had been the custom on the farm to throw the carcasses of animals down the steep bluffs into the bed of the stream. I further learned that during the summer, chicken cholera had prevailed on the farm and that a large number of chickens had died and been thrown over the bank. I was also informed that hog-cholera had caused the death of a considerable number of swine, the carcasses having been treated in a similar manner. The several yards occupied by horses, cattle, pigs, and barn-yard fowls were on the hillside, with abrupt drainage into the creek. In addition to this, large heaps of fermenting manure were deposited about the foot of the hill, near the edge of the stream where the animals went to drink.

A few of the animals on the farm had not had access to the stream, but had been watered from a well. None of these had shown signs of sickness, though they had been in daily contact with those that had their water from the pools in the bed of the stream, and even with some of the sick. On looking up the local geography of the neighborhood, I found that a number of farmers had built their homes along the banks of this stream, and had been accustomed to make use of it in much the same way as the farmer above referred to. Inquiry elicited the fact that on no less than four farms situated on the banks of this stream, animals had died showing symptoms identical with those on the farm first investigated. I regarded the evidence as sufficient to make out a strong case against the impurity of the water and gave an opinion accordingly.

The above is but a single instance out of many that have come under my observation. It is one of the most glaring, but by no means one attended with the greatest degree of loss. On another occasion where a high rate of mortality had prevailed among the cattle running on the open prairie, I was able to trace the cause to contamination of surface water. An animal, dead from anthrax, had been drawn into a basin on the open prairie. Later the rains filled the basin with water, and about one thousand cattle on the range had access to the pond for water supply. The result was that about ten per cent of all the animals having access to the impure water died from anthrax. The teachings of these object lessons are sufficiently obvious. These animals are endowed with organizations not unlike our own, and the manifest laws of being and of health can no more be violated with impunity by them than by ourselves.—Dr. Stalker, *in the May Bulletin of the Iowa Agricultural Experiment Station.*

Sterilized Milk for Poor Children.

The statistics of infant mortality during the summer in cities prove that by far the largest number of deaths are due to diseases of the digestive organs, and these are caused first of all by improper food. This is a truism so well known that it is hardly necessary to dwell upon it. But in all the charitable enterprises that have been undertaken for the welfare of babies such as fresh air excursions, sanitariums, etc., the primary factor causing disease has not been eliminated unless the proper food is supplied. And what food is given to babies in town? A pitiful tale of poverty, carelessness and

ignorance would be revealed if we could answer this question. When the baby eats what it can get, when the same food is provided for adults and infants, when fruit unripe or over ripe, vegetables, etc., enter into the bill of fare, what other results can we expect but illness and suffering? And even when milk is provided, when a careful mother endeavors to give her child the best food, how difficult, nay, almost impossible for her to succeed? Milk, so hard to preserve in hot weather, milk, the prey to decomposition and fermentation, how can she keep it sweet and fresh in her stifling apartment where ice is a rare luxury and even at night cool air cannot enter?

We have a task to perform here—to bring the gift of the fairy to those that most need it. Sterilized milk is absolutely safe and is as much, nay far more, needed by the poor babies in town than by the fortunate babies at the seashore or mountains. It is our duty to bring it to those that need it, to see to it that the poorest shall be equal in opportunities for health with the richest, at least as far as food for babies is concerned.

It is no fairy tale I tell, though I have spoken of a fairy and her gift. Sterilized milk is easily accessible to the well to do, but hitherto the poor have not shared in its benefits. For the poor, hard working mother it is almost an impossibility to prepare the milk herself, to do it properly, and in our great city it is difficult for her to buy pure milk. But a beginning is to be made, and it is hoped that it will speedily be extended, to supply the poor with sterilized milk.

Milk supplied from an excellent dairy is to be sterilized and distributed through the city to be sold at the same price as ordinary milk. Then, if the mothers can be made to appreciate the value of this food, there need not be so many sick babies in town. Of course, there will be incredulity and skepticism at first, but this will soon give way to gratitute as the baby remains well in all the summer's heat and the wonderful little bottles are regarded with awe and respect.

The milk is not to be given away but sold at a nominal price, covering expenses only for the milk, but not for labor, apparatus, etc., which must be provided by contributions. The value of the milk is enhanced to those who pay for it, as everything we pay for seems more precious than what we receive, and the ill effects of pauperizing charity are avoided. The beneficent influence of the plan will be limited only by limits of funds—the larger the means the larger the amount distributed.

The work is carrying under the supervision of a physician. Dr. [illegible], whose name is well known in this department of science, will be served as at the new building of the Eastern Dispensary, where he visits as a steam, &c., have been placed at the disposal of the Committee.

In the Medical Record of May 1st, the case is reported by Dr. [illegible] of New York, in these words: "It is a pretty [illegible] to the fact a sensible and [illegible] in the city of [illegible]. Whatever [illegible] we may have a report [illegible] the [illegible] conservative, they should apply to the [illegible] as we see in the [illegible] will save [illegible] of the [illegible] during the [illegible] a sufficient reason for the [illegible]."—The Times, [illegible].

Rules for the Management of Infants during the Hot Season.

1. [illegible] the [illegible] of [illegible] [illegible] a [illegible] [illegible] of [illegible] [illegible] [illegible]

year from the use of these poisons. If the child frets and does not sleep, it is either hungry or ill. If ill, it needs a physician. Never quiet it by candy or cake; they are the common causes of diarrhœa and of other troubles.

RULE 4. Give the child plenty of fresh air. In the cool of the morning and evening, send it out to the shady sides of broad streets, to the public squares, or to the park. Make frequent excursions on the rivers. Whenever it seems to suffer from the heat, let it drink freely of ice-water. Keep it out of the room in which washing or cooking is going on. It is excessive heat that destroys the lives of young infants.

RULE 5. Keep your house sweet and clean, cool and well aired. In very hot weather let the windows be open day and night. Do your cooking in the yard, in a shed, in the garret, or in an upper room. Whitewash the walls every spring, and see that the cellar is clear of all rubbish. Let no slops collect to poison the air. Correct all foul smells by pouring carbolic acid or quick-lime into the sinks and privies. The former article can be got from the nearest druggist, who will give the needful directions for its use. Make every effort yourself, and urge your neighbors to keep the gutters of your street or court clean.

RULE 6. *Breast milk is the only proper food for infants.* If the supply is ample and the child thrives on it, no other kind of food should be given while the hot weather lasts. If the mother has not enough, she must not wean the child, but give it besides the breast, goat's or cow's milk, as prepared under Rule 8. Nurse the child once in two or three hours during the day, and as seldom as possible during the night. Always remove the child from the breast as soon as it has fallen asleep. Avoid giving the breast when you are over fatigued or overheated.

RULE 7. If, unfortunately, the child must be brought up by hand, it should be fed on a milk-diet alone, and that warm milk out of a nursing bottle, as directed under Rule 8. Goat's milk is the best, and, next to it, cow's milk. If the child thrives on this diet, *no other kind of food whatever should be given while the hot weather lasts.* At all seasons of the year, but especially in summer, there is no safe substitute for milk to an infant that has not cut its front teeth. *Sago, arrow-root, potatoes, corn flour, crackers, bread, every patented food, and every article of diet containing starch cannot and must not be depended on as food for very young infants.* Creeping or walking children must not be allowed to pick up unwholesome food.

RULE 8. Each bottleful of milk should be sweetened by a small lumb of loaf-sugar, or by half a teaspoonful of crushed sugar. If the milk is known to be pure, it may have one-fourth part of hot water added to it; but if it is not known to be pure, no water need be added. When the heat of the weather is great the milk may be given quite cold. Be sure that the milk is unskimmed; have it as fresh as possible, and brought very early in the morning. Before using the pans into which it is to be poured, always scald them with boiling suds. In very hot weather, boil the milk as soon as it comes, and at once put away the vessels holding it in the coolest place in the house—upon ice if it can be afforded, or down a well. Milk carelessly allowed to stand in a warm room soon spoils and becomes unfit for food.

RULE 9. If the milk should disagree, a tablespoonful of lime water may be added to each bottleful. Whenever pure milk cannot be got, try the condensed milk, which often answers admirably. It is sold by all the leading druggists and grocers, and may be prepared by adding, without sugar, one teaspoonful or more, according to the age of the child, to six tablespoonfuls of boiling water. Should this disagree, a teaspoonful of arrow-root, of sago, or of corn-starch to the pint of milk may be cautiously tried. If milk in any shape cannot be digested, try, for a few days, pure cream diluted with three-fourths or four-fifths of water, returning to the milk as soon as possible.

RULE 10. The nursing-bottle must be kept perfectly clean; otherwise the milk will turn sour, and the child will be made ill. After each meal, it should be emptied, rinsed out, taken apart, and the tube, cork, nipple and bottle be placed in clean water, or in water to which a little soda has been added. It is a good plan to have two nursing bottles, and to use them by turns.

RULE 11. Do not wean the child just before or during the hot weather; nor, as a rule, until after its second summer. If suckling disagrees with the mother, she must not wean the child, but feed it in part, out of a nursing-bottle, on such food as has been directed. However small the supply of breast-milk, provided that it agrees with the child, the mother should carefully keep it up against sickness; it alone will often save the life of a child when everything else fails. When the child is over six months old the mother may save her strength by giving it one or two meals a day of stale bread and milk, which should be pressed through a sieve and put into a

nursing bottle. When from eight months to a year old, it may have also one meal a day of the yolk of a fresh and rare-boiled egg, or one of beef or mutton broth into which stale bread has been crumbed. When older than this, it can have a little meat finely minced; but even then milk should be its principal food, and not such food as grown-up people eat.

For the convenience of mothers the following recipes for special forms of diet are given:

Boiled Flour or Flour Ball. Take one quart of good flour; tie it up in a pudding-bag so tightly as to get a firm solid mass; put it into a pot of boiling water early in the morning, and let it boil until bedtime. Then take it out and let it dry. In the morning, peel off from the surface and throw away the thin rind of dough, and with a nutmeg-grater grate down the hard dry mass into a powder. Of this from one to three teaspoonfuls may be used, by first rubbing it into a paste with a little milk, then adding to it about a pint of milk, and, finally, by bringing the whole to just the boiling point. It must be given through a nursing-bottle.

An excellent food for children who are cositive in their bowels may be made by using bran-meal or unbolted flour instead of the white flour, preparing it as above directed.

Rice Water. Wash four tablespoonfuls of rice; put it into two quarts of water, which boil down to one quart, and then add sugar and a little nutmeg. This makes a pleasant drink.

A half pint or a pint of milk added to this just before taking it from the fire, and allowed to come to a boil, gives a nourishing food suitable for cases of diarrhoea.

Sago, tapioca, barley or cracked corn can be prepared in the same manner.—*Annals of Hygiene.*

Spectacles.

Dr. A. B. Osbourne (*Montreal Medical Journal*) says:

If "the proof of the pudding is in the eating," then the value of any therapeutic measure consists in its successful application. The results—remote and direct—of strain upon certain portions of the ocular mechanism, are being rapidly ascertained and becoming recognized by the profession. So far reaching are the effects of ocular strain, that an examination of the eye is considered incomplete unless the state of the refraction and motor apparatus is fully noted, and many chronic inflammatory affections of the eyes become much more amenable to treatment when the ciliary strain is removed by glasses.

The constant occurrence of certain symptons in cases of hypermetropia and astigmatism, as well as the equally constant relief of those symptoms afforded by wearing glasses, point at once to a

strain of the ciliary muscle as the prime factor in their production.

Headache is one of the most common manifestations of ciliary strain; in fact, refractive errors are so productive of this disorder that every case of chronic or recurring headache should be tested for glasses. The headache may occur in almost any form, but is most frequently frontal, accompanied by a sensation of weariness and a desire to close the eyes. It is rarely present upon first awakening in the morning, but commences during the day or during the evening after the eyes have been in use for some time. Among school children who are compelled to study at night, these headaches are specially frequent; a good night's rest usually removes the trouble completely, but only to return at the end of another day's work. The sufferer may be quite unaware of any defect of the eyes, as there are frequently no symptoms pointing directly to them, and the vision may be excellent—in fact, it is the proud boast of many such cases that their sight is perfect, yet a careful examination reveals an amount of hypermetropia which, when corrected, affords a measure of perfect relief. It is not infrequent to be consulted by patients about headaches which are referred to a slight or purely imaginary catarrh, but are in reality due to the eyes and are cured by wearing appropriate glasses. The casual relation between ciliary strain and headache is produced by the disappearance of the latter when the former is relieved, but the direct chain by which such an effect is produced is difficult to trace.

Neuralgia, especially of the frontal nerve, but also of the facial and occipital nerves, is commonly the result of ocular strain; indeed such association is sufficiently frequent to call for an examination of the eyes in obstinate and recurring cases. This form of neuralgia is particularly prone to occur when the patient is somewhat run down, owing to the fact that the eyes are required to do their customary work, notwithstanding the fact that they are in the same weakened condition as the rest of the system. In these reflex neuroses which are influenced, if not actually caused, by strain of the ocular mechanism, the neurotic condition unless early relieved may become a confirmed habit, making it much more difficult to eradicate. This is one of the strongest arguments in favor of an early optical correction. It is hardly necessary to remark that the symptoms so far enumerated are most apt to occur when the system is debilitated, so that invigorating treatment is indicating as well as relief to the ocular strain.

The causation of cataract is probably one of the most direct results of ciliary strain. * * * A large percentage of squints are the outcome of ciliary strain and many oculists can cite cases where, having seen the patient before the squint had become a confirmed habit, it disappeared completely under the use of atropine and correcting glasses. * * * The hypertrophy of the ciliary muscle resulting from the continuous strain necessary in hypermetropia and astigmatism, is an important factor in the production of glaucoma. Lastly, the asthenopia produced by some forms of ocular strain is familiar to all; it disappears rapidly after proper glasses are worn.—*American Lancet.*

THE

SANITARY INSPECTOR.

VOL. V, NO. 2. AUGUST, 1891. 25 CENTS A YEAR.

Notes, Sanitary and Otherwise.

The Sixth Annual Report has just come from the binder, and packages will be sent out to local boards of health as fast as we can put them up. The non-reception of a package may be due, in a few cases, to doubt in this office as to whether there is an organized local board this year to receive it.

On notification we shall take pleasure in supplying numbers of the *Sanitary Inspector* that fail to reach our subscribers.

Before the English Parliament, the Under Secretary of State for India stated that the laws relating to compulsory vaccination are in force in four districts of Bengal and in 183 cities and towns in different provinces of India.

It was Prof. Vaughn, we believe, who made the observation that the chemical products of Eberth bacillus of typhoid fever in bouillon (broth) are more intensely poisonous than when grown in milk. This is regarded as an apparent confirmation of the correctness of modern practice in confining typhoid fever patients rather closely to a milk diet.

The Parisian medical circles, and some outside ones, have been interested in Dr. Lannelongue's paper before the Academy of Science and the Academy of Medicine on a new method of treating tuberculosis. The results, though, so far gained from a not very extensive application of the remedy, seem to justify the interest in the Doctor's modest statements.

"I believe a baby-cab is more injurious to the eyes than the schools. I saw a baby lying in a baby cab on the street the other

day, and the sunshine was pouring right down into its eyes. This causes great injury to the eyes." This observation of Prof. Howell of Michigan, is not unique at all, but unfortunately the guardians of children are many who need repeated admonitions.

In an article on the danger of fire from steam pipes, in a German paper, it stated that, after wood had remained a long time in contact with steam, hot water, or hot air pipes, the surface becomes carbonized, and during the warm weather, the charcoal absorbs moisture; when again heated the moisture is driven off, leaving a vacuum into which the fresh air current, circulating around the pipes, rapidly penetrates and imparts its oxygen to the charcoal, causing a gradual heating and eventually combustion.—*Sanitary News.*

Preventative Disease Circulars in French.

A French edition of "Circular No 44; Diphtheria," and "No. 45; Scarlet fever," has been published by the State Board of Health for distribution, when needed, among the residents of our State who read French more readily than they do English. Their form numbers and titles are as follows: "Forme 60. La Scarlatine," and "Forme 61. La Diphtherie." Copies of these will be sent on application.

A Non-Political Tin Question.

A physician in Delaware, referring to the practical suggestions of Prof. Brackett on lightning conductors, reproduced in the June number of the *Sanitary Inspector*, writes that a gentleman whose intelligence and habits of close observation entitle him to consideration, told him he has never known or heard of a building roofed with tin to be struck with lightning. At the Doctor's suggestion we place the inquiry before our readers, and should be glad to receive any facts bearing on this companion to the beach tree question.

The Value of Muscle and Health.

I was talking to a young lady not long ago about exercising her muscles and making herself strong. "O, no; the ladies of my set would say that I was too masculine if I was strong and vigorous." This idea seems to be in a great deal of our Sunday school literature.

If a woman is spiritually good she is always sickly; if boys or girls are especially good, they are hunch-backed Vigorous health is conducive to good morals. If you want a boy to have good morals the way to begin is to train his muscles. It seems to me that the training of the muscles of the boys and girls is one of the most important things that can be considered in this convention. If a child's muscles are quite thoroughly trained up to the age of sixteen or eighteen years, he is laying in a stock of health that will last him a life time. It will be found of more value to him than if his father had left him half a million dollars."—*Dr. J. H. Kellogg.*

Smoking and Physical Development.

From the records of the senior class of Yale College during the past eight years, the non-smokers have proved to have decidedly gained over the smokers in height, weight and lung capacity. All candidates for the crews and other athletic sports were non-smokers. The non-smokers were twenty per cent taller than the smokers, twenty-five per cent heavier and had sixty-six per cent. more lung capacity. In the graduating class of Amherst College of the present year, those not using tobacco have in weight gained twenty-four per cent. over those using tobacco, in height thirty-seven per cent., in chest girth forty-two per cent., while they have a greater average lung capacity by 8.36 cubic inches.—*Medical News.*

Hush! Be Still!

In commenting on the unnecessary noises of city life, *Architecture and Building* says: "The man who deliberately violates the quiet of the night by driving a cart with every bolt loose and rattling, so as to wake every sleeper within a mile of him, approaches closely the brigand and deserves lynch law, and not the easy quittance of an ordinary fine."

"In our city life we hear frequently of the disease of 'nervous prostration'; we frequently hear our busy men talk of sleeplessness and the impossibility of obtaining a reasonable amount of sleep, and our physicians advise a change of scene to some quiet country place Every respectable house insists on its hours of quiet, and every city that has passed the boundaries of civic barbarism should insist on quiet from 11 P. M., to 6 A. M., and should punish any violation of quiet during this time, whether it be by drunken rowdies, rattling wagons or clattering hoofs."

We might add that the whistling fiend who comes into the hotels and goes to his bed in the wee small hours of the night, regardless of the rights of those other guests who do not wish to turn night into day and day into night, deserves an attack still more ferocious than that our contempory makes.

Carbolic Acid, Creolin and Lysol.

From *Revue D'Hygiene* we extract the following notes on the work of Drs. Remonchamps and Sugg relative to the comparative disinfecting values of carbolic acid, creolin and lysol. The last is a comparatively new addition to the list of disinfectants. The result of various studies of creolin were given in the Fifth Annual Report.

The authors used the bacilli and spores of anthrax, of typhoid fever, and of cholera in their provings. On the free spores the agents all act slowly; creolin and lysol act a little more promptly than carbolic acid on cultures in bouillon, but the difference would not amount to much in practice. There is, however, an important element of safety, due to the difference in the poisonous properties of these agents. While it took only 0.30 gram of carbolic acid to kill a given weight of rabbit, it required 1.10 of creolin or 2.30 of lysol.

One interesting point brought out is that spots on clothing soiled with fecal discharges of typhoid fever and cholera patients may be completely sterilized in two hours in a one per cent solution of any one of these agents cold, but if warmed to 122° F. the sterilization is complete in thirty minutes.

With lysol, disinfection of the hands and instruments was accomplished with a five per cent solution in five seconds, especially when warm; with a two and one-half per cent. solution, ulcers and cavities were disinfected in five minutes.

Lysol is a thick, light brown liquid with a specific gravity of 1.042. It is perfectly soluble in water, and forms a clear solution in contradistinction to creolin which forms a milky opaque emulsion. In washing in a solution of lysol it forms a lather, and thus, while exerting the action of a disinfectant, it plays the part of a soap. It, therefore, has the advantage of easily and rapidly permeating tissues with which it is brought into contact.

Lysol.

The last number of *Zeitschrift für Hygiene* had an important paper by Dr. Gerlach, of Wiesbaden, on *Lysol* as a disinfectant. We can give but little more than his resumé of results.

1. Lysol is more effective than carbolic acid and creolin, whether appplied to the sterilization of pure cultures of bacteria or mixed infection.

2. The disinfection of the hands may be accomplished with it without the use of soap.

3. For the disinfection of infectious sputa and stools, lysol is more active by far than all other disinfectants.

4. Walls may be rendered free from germs by spraying them with a three per cent. solution.

5. Lysol is, among the antiseptics with which its effectiveness may be compared (carbolic acid, creolin, sublimate). by far the least poisonous.

The last point is important from the surgical or gynæcological point of view.

As compared with Fürbringer's complicated process of disinfecting the hands (cleaning the nails, soaking and brushing the hands one minute with soap and warm water, then in 80 per cent alcohol one minute, in two per cent. sublimate solution one minute) simple washing in the solution of lysol gave even more trustworthy results.

Fallacies of Vegetarianism.

A great deal has lately been said about the virtues of whole-meal bread and of the evils of over indulgence in animal food. But beyond and far exceeding all moderate utterances such as these which have been listened to, and acquiesced in. by numbers of persons who are not quite certain what is to be understood by whole-meal bread, and who only apply the term of "over meat-eater" to the wealthy and luxurious classes, are to be heard certain enthusiasts who desire to banish all animal products from the dietary of civilized man, and to betake themselves again to the *regime* of Pythagoras or the Brahmins of Hindostan.

The Claims of Vegetarianism.—Lectures are delivered in our cities, societies are inaugurated for the purpose of persuading the world to abandon the use of flesh, fowl and fish; pamphlets are spread broadcast passionately urging the claims of fruit, pulse, cereals, and vegetables to be the only diet for the virtuous and

refined; and all sorts of theological and metaphysical arguments are employed to prove that the use of animals for food by the human race is immoral, unphysiological, and contrary to economical science. Vegetarian dinners are to be found in London, Manchester and all of our principal cities, and banquets are offered to the medical profession and to the learned of the land, where impassioned addresses are made by professors, and histories are narrated of experiments made by elderly men who have lived for several years past on bread, fruit, peas, beans and lentils, abjuring all but the smallest quantity of milk, eggs or butter, and entirely excluding all thought of butcher's meat, fish or fowl. One of the most prominent advocates of so-called vital foods says: "Fresh fruit is the food of health, but it is also Nature's only physic. All the drugs in the Pharmacopœia may not be taken for a single apple. Fresh fruit is the one remedy for organic diseases—phthisis, tuberculosis, cancer and many another of the terrible scourges of offended nature are capable of amelioration, if not of absolute cure, through the agency of an uncompromising fruit diet."

Another of the favorite authors of the London Vegetarian Society, Dr. F. R. Lees, known as an opponent of alcohol, claims the following great names as having been vegetarians, Daniel and John the Baptist, Pythagoras and Epaminondas, Epicurus, and Porphyry, Cyrus, Milton, Shelley, Swedenborg, Franklin, Wesley and Williams. He quotes a sentence from Pythagoras to the effect that "He who has hardened himself by killing a sheep will with less reluctance shed the blood of a man." Sir Henry Thompson's pamphlet on "Diet in Relation to Age and Activity" and "A Vindication of Natural Diet," by Percy B. Shelley, are both sold by the society as containing opinions in unison with the doctrines of its leaders. Finally, the eminent hygienist, Dr. Benjamin Ward Richardson, although himself not an abstainer from meat, has on several occasions spoken in public approvingly of the ideal of these latter-day food reformers, and apparently has favored the hope that a good time will come when mankind will no longer kill any animal for food, but live more economically, healthfully and pleasantly by the use of albumens furnished by the vegetable kingdom, which, he anticipates, will be in future probably chemically prepared so as to be as full of nutriment and as easily digested as the flesh of sheep, cattle, fish or fowl.

As a matter of experience—and experience is now recognized to be the test of all truth—the human race, from the most remote ages, have made use of fish, flesh and fowl, and, indeed, of all kinds of animal food. Among the remains discovered in the neighborhood of the dwellings of pre-historic man, the lake dwellers of Scotland, Switzerland, etc., are to be found bones, shells and other indications of the animal diet used in the dim ages before man began to record his sayings and doings. And at this moment there are large sections of the race who are compelled by dire necessity to live entirely on animal diet, to the complete exclusion of all vegetable products. Thus the inhabitants of Lapland and the wandering tribes dwelling on the shores of the Arctic ocean in Northern Siberia pass their whole lives without ever touching any form of vegetable, since nothing vegetable suitable to the human digestive organs grows in these frozen regions. And yet, according to the testimony of the Swedish discoverer, Nordenskiold, these poor exiles from civilization seem to live a life free from disease, notwithstanding they make use of a diet so much dreaded by pure vegetarians.

Mixed diet.— Curvier in his work, *Le Regne Animal*, seems to have been the first who maintained that man was a frugivorous animal, and Prof. Virchow in his work (*Uber Nahrungsmittel*, Berlin, 1872) has argued against this. That eminent physiologist in his edition of 1868, S. 25 says: "If the Kirghiz and Esquimaux afford an example how health and life may be maintained for many generations with solely animal nitrogenous food, whilst others, as the Hindoos, live constantly on vegetable diet; nevertheless history is witness to the fact, that the highest performances of the human race have been effected by nations who have lived and still live on vegetable diet. As to ourselves, natives of temperate climate, experience teaches us not to hesitate whether we should imitate the inhabitants of the poles or of the tropics, but rather to determine in what proportion we should make use of the two kinds of diet. Moritz Wagner remarks that everywhere where meat is unattainable the albuminous seeds of leguminous plants are greatly used. And where rice is the chief food the culture of fish is assiduously practised. Among the natives of the Polynesian Islands the most powerful, and courageous, and warlike are the Maories of New Zealand, whose food is chiefly fish. Among the African negro races too, according to Livingstone (*Last Journal*, London, 1874, Vol. II, S.

320), those tribes most easily bore fatiguing marches and hunger who were accustomed to eat meat with their vegetables. The negro tribes who lived almost entirely on vegetables were found by Livingstone to be quite incapable of great fatigue, and unable to stand up against the fevers of the climate .Wagner found in Central America, where the food consisted almost entirely of rice and maize, an idle and shiftlesss population, far behind in civilization the people who possess cattle. Tommasi (Somario della Clinica Medica de Pavia, Naples, 1864) says of the workmen in upper Italian rice fields, that they die early of diseases of exhaustion, whilst the farmers who live well attain old age. Dr. Wernichs (*Zeitschrift fur Biologie*, Vol. XV, S. 197) says: The Japanese exhibit great bodily weakness and are of small stature, with narrow chest and weak muscular system. Their diet consists of rice boiled in water. It has often been remarked that England could never govern Hindostan were it not that the Brahmins have taught the Hindoos to live upon vegetable food, and have thus destroyed their vigour of body and mind. Prof. Bouchardat, one of the earliest writers on Hygiene in France, in his lectures delivered at the *Ecole de Medecine* used to teach that the nations of Europe might be gauged as to their energy and capacity for endurance by the quantity of animal food consumed per head annually by the citizens of each country. The important table, drawn up by Prof. Gobin in his *Pro duits Alimentaires*, p. 194, gives the following results: Taking the amount of beef, mutton, pork, goat's flesh, poultry, game and fish consumed in each country, he finds in England there were 47,000 kilogrammes annually consumed, against 31,000 in France, 18,000 in Prussia, and 15,000 in Austria, 12,000 in Spain, and 10,000 in Italy. In 1890 it is estimated that the inhabitants of New Zealand consume 200 pounds of meat per head annually. According to Schi ferdecker, the daily consumption of meat per head between 1858 and 1867, was, in Berlin, 135 grammes; in Paris, 185; in London, 298. Of late years it has been said that the amount of animal food consumed per head of the population per annum amounts to 114 pounds in England, against 26 pounds in Italy. Dr. Riant (*Conference a l'Asile Imperiale de Vincennes*) reminds his hearers that when the Rouen line was being made both French and English workmen were employed. The smaller working powers of the French laborers were striking and humiliating. The English workmen did more work, and, in spite of this, were

less fatigued. The reason was looked for, and it was a very simple one. "The English workmen," says Dr. Riant, "eat a great deal of roast beef." Whilst the Englishman was devouring his roast beef, the Frenchman was eating a tasty salad, destitute of nourishing principals. Thus the poor Frenchman was overwhelmed with fatigue, and unable to continue the work, which the well fed Englishman performed without suffering. The French workmen were then put on the English diet, and soon accomplished as much and sometimes even more than the latter; for, besides that their strength became equalized, the Frenchmen exhibited greater energy, arising from their temperament.

The anatomical argument.—Vegetarians are wont to allege that the position of man in the animal kingdom makes it probable that he was intended to live solely on vegetable diet. And this seems to have been the opinion of Cuvier. But if we examine the intestinal canal of man, and of the herbivora and carnivora, we find that the canal is of enormous extent in most herbivorous animals, being in the sheep about twenty-eight times the length of the body. In the purely carnivorous animals, on the other hand, it is comparatively short, being in the loin only about three times the length of the body. In man it is only about six times the length of the body. It would, therefore, appear that the digestive organs of civilized man are suited to a mixed diet. Whilst again, in the herbivora, the digestive organs constitute from fifteen to twenty per cent. the weight of the body, and in the carnivora from five to six per cent., the intestines of man constitute only from seven to eight per cent. of the weight of the body.

The dislike to animal food at the present day is greatly based on the idea that it is cruel to kill animals. But it is clear that, if domestic animals were not eaten, flocks and herds would not exist. The landscapes of Western Europe would be as destitute of cattle and sheep as the rice districts of China. It must be remembered, too, that the life of a well fed animal is a remarkably tranquil and agreeable one. And as these animals have no apprehension of death, if their slaughter be painless, as it ought to be, there is a far greater amount of happiness for sentient beings afforded by using them as food, so that, on the score of humanity, vegetarians have not the strong position to which they lay claim.

The chemical argument.—A flood of light has been thrown upon the theory of digestion by Liebig (born 1803, died 1873) and others

of his contemporaries such as Moleschott, Dumas, Boussingault, and Payen. Liebig, in his chemical letters. published in 1851, enunciated the view that the albumen and fatty products found in vegetable food were precisely similar in their nutrient qualities to animal albumens and fats. This idea of Liebig's was a consequence of his chemical analysis of different foods. Where he found an equal quantity of nitrogen he considered that food to contain an equally digestible albumen Prof. Moleschott says in reference to this (*Kreislauf des Lebens*, Mainz, 1852, S. 285), "It is an erroneous statement, when we read in Liebig's *Chemical Letters*, S. 545, 'Bread and meat, or vegetable and animal diet has the same effect upon the functions which man has in common with the lower animals, and perform identical service in the living bodies.'" During the last twenty-eight years a host of experimenters, for the most part natives of Germany, have by their labors thrown light upon the theory of nutrition. [For the most of the "Chemical Argument" and for reference to many works bearing on it, we must refer to the original.—*A. G. Y.*]

Various diets.—Dr. Meinert gives also some account of the diet of the soldiers in Germany and other European countries. In peace the soldier in Germany receives 75 grammes of digestible albumen, 22 grammes of fat, and 489 grammes of hydro-carbons. In England the soldier receives 90 grammes of digestible albumen, 48 grammes of fat, and 452 grammes of hydro-carbons. It is interesting to see what the diet is in workhouses and other charitable establishments. According to Playfair the inmates of the best fed workhouses in the country have a daily allowance of 82 grammes of albumen, those of the worse fed only 59 grammes. In prisons, Dr. Meinert mentions the case of one in Agram, where the inmates received 81 grammes of albumen, 19 of fat, and 416 of hydro-carbons. Of these inmates it may be said that they had frequent attacks of scurvy. With the exception of Sundays, when 140 grammes of cooked meat are given, all the rest of the food was derived from the vegetable kingdom.

There can be no doubt that both in prisons and workhouses the diet is frequently not nearly sufficiently albuminous, and the prisoners often complain bitterly of hunger, as I have had an opportunity of ascertaining from personal testimony. Meat contains, in equal weights, from ten to fifteen times as much albumen as vegetables do, and articles of diet are more quickly and easily digested in

proportion to the similarity which their constitutents exhibit to those of the blood. Meat is, therefore, not only better than bread, but better than any vegetable for the purpose of blood making. Playfair and Boeckmann found by the analysis of beef, and the blood of oxen, that they contained in equal weights, identically the same proportions of nitrogen and carbon, that is, 17 per cent. of nitrogen and 52 per cent of carbon. We may, therefore, say of any diet that it is to be preferred in proportion as it contains more animal albumen. It is not sufficient to ascertain the quantity of nitrogen any article of diet contains in order to appreciate its worth as a nutrient, since many nitrogenous bodies in plants are not albumen at all, and cannot be digested; and we have no right to represent the different kinds of albumen as being equivalent in nutrition. Thus, if we were to attempt to obtain all our albumen from potatoes, few persons have sufficient digestive powers to consume the quantity required. The most important of all experiments upon diet have been those of Dr. G. Meyer and Max Rubner and Dr. Flügge in Berlin. Dr Rubner (*Uber die Ausnützung einiger Nahrungsmittel, Zeit. für Boil., 1879*) gives a table in which he shows that when meat was given, only 2.5 per cent. of the nitrogen was found in the fæces, which, he says, is equivalent to its being entirely digested, since even in fasting persons a certain small percentage of nitrogen appears in the fæces. The nitrogen of cheese and eggs was equally well digested with that of meat, whereas, when milk was given, from 7 to 12 per cent. of the nitrogen was undigested; 17 per cent. of the nitrogen in macaroni was not used in the system; 19 per cent. in that of white bread; 15 per cent. of that in maize; 25 per cent. of that in rice were not absorbed. Similarly, in peas, from 28 to 17 per cent. of the nitrogen escaped digestion; 32 per cent. of the nitrogen of black bread; 32 per cent. of that in potatoes; and 39 per cent. of that in yellow turnips was not used by the system. In the case of a man who took 207 grammes of lentils, 1,000 grammes of potatoes, and 40 grammes of bread, no less than 47 per cent. of the nitrogen consumed was useless to the system. While then, the whole of the albumen contained in the muscular tissues of the meat is digested, only 81 per cent. of that contained in white bread; 68 per cent. of that contained in black bread; 80 per cent. in maize; 75 per cent in rice; 68 per cent. in peeled potatoes; and from 72 to 82 per cent. in shelled peas is digestible. Vegetable diet thus is for man only of so much value as he can daily consume and make

use of in the system. The great distention of the stomach which is caused in many cases in entire vegetable diet is not favorable for the body of man. since so much time is required for digestion that the periods of rest are too short for the digestive organs. It is quite true that peas. beans and lentils are among the cheapest articles of diet, but they can only be used in great moderation, since in many cases they overload the stomach, and give rise to disturbances of digestion. Macaroni and rice are really dearer than meat. Next to the leguminous plants, the potato gives the greatest quantity of digestible albumen for the lowest price. It is, therefore, of the greatest importance in diet; but can only be used to a certain extent. A curious fact arises out of the experiments of the German chemists, that the albumen of leguminous plants, when cooked in their natural state or unground, affords only 53 per cent. of digestible albumen; while not less than 82 per cent. of lentil flour is digested.

Whole-meal bread.—Much has been said in praise of whole-meal bread as compared with the ordinary white bread in our baker's shops. This praise seems to be wholly unmerited. The coarser the flour used for baking, the more difficult it is of digestion. The presence of bran, as in the case of pumpernickel, causes a great portion of the flour to escape undigested. The advice then given to use bran in the making of bread, is not only useless but injurious. "The whole contention of the vegetarians," says Prof. Reclam, "appears to me rather idle." No one denies that people can live without meat, but, on the other hand, no one denies that one can live entirely on an animal diet, and it must be remembered that all vertebrate animals before birth live entirely on animal food, and when enthusiastic vegetarians such as Theodore Hahn assert that Paradise can only be regained by vegetable diet, he and his coadjutors would make us believe that they know more than the whole of the physicians and physiologists of the world. Vegetarianism is a dream, and opposed to the experience of ages —DR. C. R. DRYSDALE *in San. Record.*

The Causes of Dyspepsia.

One of the most frequent causes of dyspepsia (says Dr. Wm. Pepper), is the constant use of irritating substances, such as tobacco, alcohol and highly seasoned food. Tobacco and strong tea and coffee act both by depressing the nerve force of the stomach and by directly interferring with the digestive processes. It will not be disputed by any fair-minded person that tobacco, tea and coffee are injurious when taken in excess. It must be admitted that the majority of men, in the state of health, can use a certain amount of tobacco without injury. This amount varies with the individual, but is in any case small. I cannot speak too strongly against the filthy and disgusting habit of chewing tobacco.—*Annals of Hygiene.*

THE

SANITARY INSPECTOR.

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Notes, Sanitary and Otherwise.

This is a Hygienic Congress number. Though the general report of Prof. F. C. Robinson is longer than the SANITARY INSPECTOR is used to admitting, we feel sure our readers will find it interesting to the very end.

A Sanitary Convention and conference of local boards of health, under the direction of the State Board of Health, will be held at Portland, Oct. 27. Papers will be read and discussions will be held on a large number of the most important sanitary questions. It is hoped that the local boards will be well represented, and that many other persons interested in the public health of the State will attend. Excursion rates have been secured on nearly all the railway and steamboat lines.

Report of Maine's Delegate to the Hygienic Congress.

It may not be generally known that there took place last August, from the 10th to the 17th, the most important meeting ever held in relation to Hygiene and Public Health.

It was held in London, England, and was called "The International Congress of Hygiene and Demography." The Maine State Board of Health, in its desire to keep its work up to the highest standard, sent a delegate. These are some of the things that impressed him most, and some of the notes he hastily made while rushing from section to section endeavoring to hear all the wisdom spoken. He will perhaps, later, enter into details in reference to different discussions. In the first place he was astonished at the magnitude of the gathering. He knew from his reading that, all over the world, the last few years had witnessed an increased and an increasing interest in matters relating to public health. He had attended the annual meetings of the American Public Health Association and seen the intense earnestness with which such matters were being investigated in his own country. But still he was

not prepared for what he saw. Indeed, he felt almost ashamed to state his reason for going abroad to the pleasant companions he met on the steamer going over. He fancied as he spoke of it that they looked at him with a sad kind of interest. None of them had ever heard of such a Congress, and while they did not deny that one was to be held some of them seemed to feel it their duty to prepare his mind for the discovery that it would be a very small affair. He even questioned with himself as to whether it would not be advisable to delay his reaching London till the meetings were under way in order to avoid the humiliation of the small opening.

But he finally concluded to "face it out" and went straight to the great metropolis, and without delay sought the office of the secretary to register. There his worst fears seemed confirmed, for although it was nearly nine o'clock in the morning when he entered the office in Hanover Square, only a single clerk greeted him, and he fancied that he eyed him with kind of exultation as the first delegate to arrive. But when to his hesitating inquiry, "are there other delegates in the city?" he was answered, "yes, nearly two thousand," he began to hold up his head and feel his importance.

He learned later that the London day does not "officially" begin till 9 A. M , and hence the single clerk with nothing to do.

This was Thursday, Aug. 6, and the opening day not till the 10th.

When that day came, the nearly two thousand had become nearly three thousand, and oh! what a crush. The twenty clerks and as many more secretaries were simply overwhelmed. They tried to avoid a too great jam in any one place by arranging a series of desks in the form of a hollow square in the large reception room of the Royal Academy in Burlington House, and hanging over each one or more letters of the alphabet, and giving notice for delegates to seek the desks whose letters corresponded with the initials of their family names. But even this seemed to afford little relief. The despair of the late coming delegate who sought his proper desk and read the alluring notice of some reception or garden party "limited to 400" and realized that fully 500 struggling delegates were in front of him is better imagined than described. There it was that eminent members of the Royal Academy might have found "studies for mobs" without going far from their studios.

Truly, London was taken by surprise. It had just got through entertaining the Emperor of Germany. Parliament had adjourned, the season was over, and suddenly this crowd appeared. At first they seemed inclined to resent the intrusion. But as soon as they comprehended what it all meant they went to the other extreme and entertained them in a manner never before equalled in that great city. There was, too, a kind of appropriateness in the Congress meeting so soon after the great military displays attending Emperor William's reception. The papers had been full of military matters. troops had been reviewed, mock battles fought, and the impression given that destruction and death were the chief objects of nations. He who could in a short time put several hundreds of thousands of armed men into the field must be shown that others could meet him if necessary.

Such displays seem necessary accompaniments of royal visits, even though the visitors are, as in this case, near relatives. The loving and loved grandson must be shown that if need be he could be given a "warm" reception of another kind. But hardly have the military sounds died away when the trooping crowds of the Health Congress come, and ideas of killing give place to those of saving. Thoughtful Englishmen seem delighted to realize that after all there were a great many persons who cared more for saving human life than for devising means to destroy it. In reality London had witnessed the sudden replacement of mediaevalism by the spirit of modern civilization.

The Prince of Wales was honorary President of the Congress, and was expected to open the session by an address. St. James Hall, Piccadilly, was secured for the occasion. Here was one of the first mistakes of those in charge, due evidently to their lack of faith. The hall would hold only about 2000 and admission was to be by ticket. Of course several hundred of those who ought to have been present were unable to get in, and complaints were loud and bitter. The Maine delegate found himself at first among the disappointed, but not having a large stock of "expletives" he soon exhausted them, and, remembering from his boyhood the different ways of getting into a circus without a ticket, set about trying some of them and "got there." If Albert Hall, capable of seating 8000, had been secured, it would have been packed, and how appropriate it would have been, considering the interest Prince Al-

bert had in such meetings, and that his own son was to make the address.

On the speakers' platform, facing the large audience were seated the most eminent of the delegates, and as they moved in greeting each other while waiting for the Prince, it was interesting in the extreme to a stranger to hear them pointed out and commented upon by those who knew them. There was Sir James Paget of world wide reputation among doctors, tall, with an old, but strong looking face. Near him sat Sir Andrew Clark, president of the Royal College of Physicians, and family physician to the Prince of Wales. The fine looking president of the Royal College of Surgeons, Dr. Thomas Bryant, was not far away. Sir Richard Quain, Sir Spencer Wells, Sir Edward Saunders, Sir William Jenner, Sir Joseph Fayrer, with others, both titled and untitled, mostly the former—for England likes thus to distinguish her eminent men in all—branches were also there. Nor was the group all made up of doctors, for the fine looking face of Sir Frederick Leighton, president of the Royal Academy of Arts, could be seen, and in another quarter, Sir Robert Rawlinson, the historian, and Sir Henry Roscoe, the chemist, smiled their approval upon the gathering. The Lord Mayor of London, with one or two of his sheriffs, and here and there a lord or two, added dignity to the occasion, and the picture was appropriately set off by several delegates from British India dressed in their brilliant native costume. The eminent men from continental Europe were far from being lost in such a distinguished crowd, and it was not difficult to select with the eye their strong and aggressive faces, though their names could not be learned so easily.

Promptly at the appointed hour, 3.30 P. M., the Prince enters. He is dressed in plain black with cutaway coat and no uniform or decoration, excepting the badge of the Congress pinned to his breast. The audience greets him with applause and the band plays "God save the Prince of Wales." He greets in a familiar way several of the distinguished men, giving an especially warm greeting to Sir James Paget who once attended him through a most dangerous sickness. In a few moments he takes the chair reserved for him and the meeting is called to order.

The General Secretary, Dr. Poor, gives a notice or two, then calls the Prince to preside, and, with a word of preliminary congratulations at the large numbers present, he begins his address,

reading from a manuscript in a clear, impressive manner. It was a model address for the occasion; short, sensible, business-like. It seemed original, and doubtless was, for it is well known that His Royal Highness takes a deep interest in hygienic matters. In several places he was interrupted by applause, especially when he said that "if so many evils of human life are preventable, then why are they not prevented," and pledged his own best efforts in the future to that end. Other short addresses followed, given by delegates from different countries. These were for the most part uninteresting, owing to their great similarity in matter and poor delivery. I suppose it was thought necessary to give each country a chance to say something, lest omitted ones feel slighted, and there seems to be nothing abroad which so rankles as slight upon one's country. It seemed strange, however, that there was no speaker from the United States. I suppose they thought her too far off to feel slighted if left out. The Prince introduced each speaker, and did it very appropriately; in short, he showed himself an admirable presiding officer.

One thing was especially noticeable, that references to Pasteur and Koch were received with more applause than those to kings and princes, and that Sir James Paget, when he rose to speak, was received with more applause than the Prince himself. Perhaps, however, it was because he was the last speaker.

This was Monday, Aug 10, and on the next day at ten o'clock A. M. the real business of the Congress began. The work was wholly done in sections, of which there were ten, named as follows:

1. Preventive Medicine.
2. Bacteriology.
3. Relation of Diseases of Animals to those of Man.
4. Hygiene of Infancy and Childhood.
5. Chemistry and Physics in Relation to Hygiene.
6. Architecture in Relation to Hygiene.
7. Engineering in Relation to Hygiene.
8. Naval and Military Hygiene.
9. State Hygiene.
10. Demography, Health Statistics, Industrial Hygiene.

It was of course a physical impossibility for one man to hear all papers presented. He must select what he was most interested in and leave impressions of the rest to be obtained from printed accounts. Sections 1, 2, 4, 9, 10 were the most popular, but all

were well attended. Indeed, it was remarkable, considering the many attractions which London offered, to find the section meetings so fully attended at all times, and whenever any subject of general interest was up there was hardly standing room.

But while the papers were interesting, the discussions upon them were more so. Doubtful or "cranky" notions were criticized unmercifully. The Congress intended to be careful and not endorse, even by silence, things which had not been carefully investigated. But if papers and remarks were most critically examined, they were most courteously received. The audience was, of course, largely English, and, if a true sample, then English audiences are most delightful to a speaker who has anything to say. It is always a support to a speaker to have the points he makes seen and audibly approved or disapproved. American audiences are getting more and more into the absurd habit of thinking it shows uncultivation to be demonstrative. The effect of the frequent hear! hear! or no! no! of an English audience has to be experienced to be appreciated.

It was a novel sight to an American to see a "live lord" get up to read a paper or discuss one. It dispelled the idea that English noblemen do nothing but attend horse races or play baccarat.

In section 4, Infancy and Childhood, the subject of school hygiene received great attention. Indeed, anything which touched the school question was given careful consideration. Public schools in England and on the continent are of comparatively recent growth, that is, such schools as are open to poor as well as rich, but they have been going long enough for all to see that they can be made most powerful agents for good to the state. The idea that all that is needed for a successful school is a room, teacher and books, receives little support, at least in England. And all speakers at the Congress who touched upon it, indicated their belief that pure air and attractive rooms and suitable means of physical exercise are not simply desirable, but necessary. A most attractive feature of one session was a class in physical culture from one of the London Board Schools, as their public schools are called. To an American, and especially to a reader of Dickens, anything under a "Board" is regarded with disfavor. He immediately thinks of Oliver Twist and the "Board" which dealt with him. But an acquaintance with the London School Board soon dispels such ideas. Certainly its chairman, Mr. J. R. Diggle, has

no resemblance to Mr. Limbkins, and a visit to the school board offices on Victoria Embankment shows that London has a live public school system under most efficient management.

A most animated discussion took place over the question as to where the work of the state should stop in dealing with poor children. Upon the ground that an ill fed child cannot be educated, some, notably Mrs. Besant the "Theosophist," maintained that food as well as instruction should be furnished in the schools in the poorer districts. Others as stoutly argued that such help would simply make the parents more degraded than at present; in short, as their opponents claimed, their position was that poor children must be allowed to starve as discipline to their fathers and mothers. Incidentally, facts were brought out, showing a state of poverty and degradation among the poor of London and other English cities almost beyond belief.

In Bacteriology no absolutely new principles were propounded, but old ones were examined. Neither Pasteur nor Koch were present, but frequent reference were made to each, and their friends at such times applauded their names after the manner of our political meetings when "favorite sons" are named. The questions of immunity from infectious disease and the destruction of microbes within the body were ably-handled. It was very noticeable how it was taken for granted that bacteria are responsible for many diseases. That question is settled. How to destroy them is now the inquiry, and not only how to destroy them but also neutralize the poison they generate. Some animals, as is well known, never have certain diseases and cannot be inoculated with them. Thus inoculate a dog or cat with anthrax virus and it will have the disease, but not so a rat. A sheep never has tubercles. Its blood is in some way deadly to the bacillus which causes them. Discover the secret of this and you cure the disease. It has been generally believed by bacteriologists that the deadly matter was always a product of the microbe itself, and Koch's tuberculin is prepared on this principle. But at this Congress several men eminent in the science claimed that certain "defensive proteids" are generated in the blood cells of different animals and that by the study and separation of these the best results are to be obtained in the cure of microbe diseases. The general feeling as to Koch's consumption cure was one of disappointment, but Prof. Ehrlich, who is closely associated with Koch himself claimed that by improved methods of

preparation and more careful use most wonderful results, not yet published, have been obtained.

The relation of disease to drinking water, and the importance of bacteriological examination of water were dwelt upon. But it was properly insisted upon that it was the kind rather than the number of bacteria which makes a water dangerous. The fallacy that if a single sample of water does not contain bacteria of disease, therefore a given water supply has no relation to an epidemic, was well exposed by Prof. Fodor of Buda Pesth. He cited an example in his own district, where in a town supplied with pure mountain water an alarming epidemic of typhoid fever raged. It seemed impossible for the water to have been polluted for it was brought under ground in pipes direct from its source to the town fountains. More than a hundred samples, too, were examined before a sign of the bacillus was obtained. Finally a culture was found which undoubtedly was the typhoid bacillus. The pipes were now examined and a leak was found where they passed near the house in which one of the first cases originated. Tests showed that the drainage from this house escaped into the pipe and all was clear.

In the section of Preventive Medicine the alcohol question came up, introduced by a paper by Sir Dyce Duckworth, one of the physicians to the Royal Family. He spoke of "our (England's) miserable national pre-eminence in the abuse of alcohol." He did not believe that total abstinence was necessary, but honored those who practiced it. The taking of any alcoholic liquid except at a meal, and then not more than an ounce to an ounce and a half in twenty-four hours, he totally condemned. Even this amount, he said, was sometimes hurtful and only permissible to an adult.

The discussion was most animated. And anyone in the United States who fondly believes that in Europe there is the happy condition of free alcohol and no abuse or attempted interference with the "rights" of the people, should have heard that discussion. The curse all saw; as to the remedy there was a difference of opinion. The power and duty of the state to interfere was practically unquestioned, and some form of local option generally advocated. One enthusiastic American delegate claimed that high license solved the problem in his state, but he was unable to make it clear just how making a monopoly of it could prevent its abuse, and, like his statement that "the Maine law was a failure," it seemed to rest on his own authority, and to be like some of the newspaper

stories in war times which were headed "important if true." The important point seems to be that in every foreign government the alcohol question is assuming serious proportions, and much thought is being given as to the best way of dealing with it.

But these are only "brief notes" and must be brought to a close. The working hours of the Congre-s were from 10 A. M. to 2 P M., and outside these, many attractive entertainments and excursions were offered. The Congress badge would admit one to all important palaces and exhibitions, and each afternoon a garden party and each evening a conversazione kept all well occupied. The Queen was at Osborne, Isle of Wight, and a select few were invited to an "Audience" with her there. With all this, at the end of the week most of the members looked as though they had been attending anything but a Health Congress.

Undoubtedly, the two "swellest" entertainments were the garden party given by Mr. and the Baroness Burdett-Coutts, and the conversazione given by the Lord Mayor and Corporation of London in the famous Guild Hall. It is a risky thing to arrange for a garden party near London on account of the liability of rain, but all those arranged for the Congress were favored with the best of weather.

No description need be given of Holly Lodge, the charming home of Mr. and the Baroness Burdett-Coutts. It is enough to say that it remains in the mind of the Maine delegate as the nearest thing to perfection in house and grounds that he ever expects to see. The beautiful walks, the shady nooks, the patches of lawn here and there—and such a velvety lawn too—made an impression never to be effaced. He should not forget to mention also the quiet grace of the Baroness, or the cordialty of her husband which was especially manifested to all the American delegates. Certainly in becoming an Englishman by adoption he has not forgotten that he was an American by birth.

The Guild Hall, where the Lord Mayor and Corporation of London received the Congress, is a historic old building which has recently been much enlarged by a modern addition. It dates from about 1400, but has been so much repaired and added to, that little of the structure of that date remains. It contains countless halls and court rooms and picture galleries and museums, all of which were crowded with the members of the Congress, and the leading society people of London. The Lord Mayor and the Lady Mayoress in their brilliant state robes, seated upon a raised plat-

form, received the guests, and uniformed attendants waited at every door to guide strangers and explain the things they saw. Bountiful refreshments were of course provided, and towards midnight some showed evidence of having, as expressed by a delegate to the "pan-American Congress" "schwumed in champagne."

These two entertainments were the most elegant, but no more enjoyable than some others less pretentious, notably the garden parties of Sir Edward Saunders, Sir Spencer Wells and Lord Wantage, and the conversaziones at the Royal College of Surgeons, Royal College of Physicians, and South Kensington Museum.

The sermon to the Congress by Canon Farrar in Westminster Abbey was a fitting close to its labors. The celebrated preacher seemed almost inspired as he stood under the vaulted roof of that building so sacred to the whole Anglo Saxon race, if not to the whole world, and eloquently proclaimed that such work as the Congress had been doing was true Christain work and such as the Great Master would bless.

As to the results of the convention, they were many and important. The chief of these was the powerful impetus it undoubtedly gave to all sanitary measures abroad. We are, perhaps, too far away and sent too few delegates to feel it much. But not only during the meetings but for days after their close, the leading papers in the great European capitals, were devoting both news and editorial space to the questions which the Congress had discussed. Public opinion abroad is perhaps harder to arouse, but when aroused is less easily quieted than with us. It is also much more impressed by large meetings, because they have fewer of them.

There is, too, so much national jealousy and military suspicion of each other among the nations of Europe, that each is fearful lest the other get some advantage. Does a great meeting announce that the people of any country are degenerating? Then its soldiers will not be so vigorous and something must be done. When these things are considered and also that they do things abroad more thoroughly than we do, it will not be surprising if the next few years witness an amount of sanitary progress in Europe far exceeding that which any even long period preceding can show.

F. C. Robinson.

OUTSIDE THE HEALTH CONGRESS.

As to its size, one is surprised to find not only that London has four times as many people as New York, for example, but that it is still rapidly growing. In the last ten years a city as large as Boston was added to it. On the average a completed house is built every hour in the day, and not a day and night roll round without adding three hundred to its population.

Of course such a center of population presents a great field for the study of sanitary problems. How are they supplied with water? What of their sewers? Are their streets clean, and if so, how is it done? Is it in general a healthy city? As to the water supply, it is in the hands of several companies, and the source of the water is varied. Five companies take some 75,000,000 gallons daily from the river Thames This is about one half the total supply. The remainder comes from the river Lea and from artesian wells. Of course that taken from the Thames comes from many miles above London, as the Thames water near the city is filthy in the extreme Owing to the sewage from the cities above the place where the water is taken, the Thames water is looked upon with suspicion for drinking purposes, that from the Lea and the wells being preferred. The latter is a very hard water, but clear and tasteless. In the cholera epidemics of 1832, 1848, and 1854, statistics show that the mortality in different sections of the city was directly proportional to the purity of the water as shown by chemical analysis. Regions of the city supplied with water from polluted wells or from the Thames nearest the city were most afflicted with the dread disease. In general the water question of London is in a far from satisfactory condition, and even now a commission appointed by Parliament is considering what is to be done. It seems probable that water may have to be brought even from the mountains of Wales.

London is said to be poorly supplied with sewers, or perhaps better, to be supplied with poor sewers. There seems to be enough sewers, but they were not properly made. The original plan was to have them all empty into the Thames, and most of them do, and the effects of this is seen in the dirty, foul smelling water which flows up and down with the tide. But the sewers seem to have been constructed with too little grade and consequently have to be pumped out. Some attempt has been recently made to utilize parts of the sewage on sewage farms and more of it will doubtless be so used soon.

The main streets of London are kept delightfully clean, and can be crossed by foot passengers without danger of pollution even in rainy weather. The excellent paving, largely asphalt or wood, is easily cleaned and an efficient force is always at work cleaning it. In the day time numerous small boys with a kind of dust-pan and brush dodge in and out between the crowd of vehicles, and deftly

sweep up the manure and put it into receptacles on the sidewalks. It is said that this is sold to farmers for more than enough to pay all expense of collecting. To complete the work gangs of men in the early morning go along and wash down and sweep off what the boys have left. In this way some 2,000,000 tons of waste matter are annually hauled from the streets of London. A large part of this is evidently the particles worn from the stone pavements, and it is interesting to know that the most of this is either melted into slag and returned to the streets again in repairing them, or sold to brickmakers for clay to be made into bricks to be used in houses perhaps along the same streets again.

London is on the whole a healthy city. Its average death rate is 21.5 per 1,000. That of Paris it 28.6, and of New York, 26.2. Of course this takes the city as a whole. But the poorer and more crowded quarters have a higher mortality. In some parts, as Whitechapel, it exceeds 30 in 1,000.

Movements are now on foot, both in London and other large English cities, to increase the healthfulness of their slums by providing better dwellings for the poor. The movement is an exceedingly interesting one to sanitarians and its results are being watched carefully. Sections are taken, the buildings condemned, paid for, and torn down. In their places decent ones are erected and rented at a cheap rate. Owing to the complicated method of governing London by which the city proper has a sort of independent government within the regular city government, less of this work has been done there than in places where unity of action is more easily secured, but even there it is well under way.

Such work is most commendable in spirit, but it seems very questionable whether it will not be found that something besides a good house is required to elevate a man morally. It is probably not one but many things which degrades men and women, and keep them so. There are those in England who claim that it would be far more effective in raising a degraded family, to shut off their chance to get intoxicating liquor than to put them into a better tenement. Certainly the drunken habits of the majority of the slum dwellers both in Europe and America are well known. A curious confirmation of this was recently obtained in Manchester, England. While the matter of rehousing the poor in the celebrated "Ancoats" district where some fifty thousand wretched people live, many of them dwelling in tenements as stated by the members of the city council to be "absolutely unfit for human habitation," was being discussed, a gentleman connected with the United Kingdom Temperance Alliance, offered a reward of five dollars for every case found where in a family neither the father or mother used liquor to excess. The challenge was accepted, but after long investigation not one could claim the reward.

F. C. Robinson.

THE

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Notes, Sanitary and Otherwise.

As the result of the neglect of vaccination and revaccination, some of our towns are inviting a small-pox epidemic that will be like the conflagrations in some of our villages that have had no fire department, no fire engine, and not even water at hand to put out fires.

When we speak of the protective power of vaccination, revaccination is always included as a matter of course.

Among 826 cases of small-pox observed by Zeulzer, forty-two or five per cent. were of the non-pustular, or hemorrhage variety.

One of the leaders of the anti-vaccinationists in this country was the Rev. Ralph Fothergill of Fall River, Mass. How fearful a moral responsibility he took upon himself in advising the public to abstain from vaccination, the manner of his death illustrates. He died of small-pox, leaving four of his children in his house sick with the same disease at the time.

Another witness, of the experienced and practical kind, to the efficacy of vaccination, is Dr. Edson of the New York Board of Health, who says that, "During over nine years' service in the health department of New York I have never seen a case of small-pox in a person who had been successfully vaccinated within five years, and the number of cases I have seen mount into the hundreds. During that period I have seen only one inspector of contagious diseases contract small-pox, and he was the only inspector who disbelieved in vaccination, and refused to have it performed on himself."

The Meeting in Kansas City.

The meeting of the American Public Health Association at Kansas City appears to have been a great success and a very pleasant

one. One gratifying feature is the cordiality with which our sister republic of Mexico has responded to our invitation to come in with us. Ten or more delegates represented the Mexican national and provincial sanitary administrations, and the papers read by them will form a valuable contribution to the transactions. President Diaz sent an official invitation to the association to hold the next year's meeting in his capital, and the invitation was accepted.

An Early Proof of the Value of Vaccination.

A correspondent of the British Medical Journal sends to it the following extract from a French newspaper of October 3, 1804: "Six black children, the first who had ever been vaccinated at the island of Reunion, and from whom 5,000 people were vaccinated, were shipped on board the vessel Jeune Caroline, bound for one of the Seychelles Islands to perform quarantine for small-pox.

"The six children were three months on board the ship, eating, drinking and sleeping with the sick; during the time of quarantine they were inoculated with the virus taken from the pustules of the diseased passengers, by large incisions made in both arms. From the report made at the time, and communicated to the Central Society of Vaccine by the Minister of the Home Department, it was found that although these six children had slept under the same blankets, and in contact with the pustules of the sick, eating and drinking out of the same vessels, and having been inoculated with pus from the patients who ultimately died of the disease, they were all preserved from the contagion, and were, during the whole time, in perfect health. The proof and counterproof is one of the most severe tests ever performed, and ought to have a marked place in the history of vaccination. The fact of six children having lived in perfect health on board a small ship infected with small-pox, having on board twenty blacks with confluent small-pox—six of whom died—twenty to twenty-five others with dry crusts all over the body, with seven deaths before their arrival at the quarantine station, all packed in a small space between decks, is perhaps the most crucial test ever witnessed of preservation by vaccination."

Small-Pox in Canada.

A few weeks ago the official reports sent to his office by the Secretary of the Board of Health of the Province of Quebec, indicated the rapid spread of small-pox in that Province, especially

down the St. Lawrence river, opposite to our Madawaska settlements. As precautionary measures, those towns particularly exposed to danger were warned, a medical inspector was sent up to the infected regions to learn the exact status of affairs, through the co-operation of the Maine Central and Grand Trunk Companies projected excursions to Canada were cancelled, and preparations were made for a railway inspection service if found necessary.

The appreciation of the fact that there is now in existence a Provincial Board of Health that will do all in its power to check such outbreaks, was an encouraging circumstance. A very different thing is the sanitary organization of the Province of Quebec now from what it was six years ago. This and other interesting facts may be gathered from the following letter under date of Oct. 24, from Dr. Pelletier, Secretary of that Board:

Yours of the 21st inst. came to hand yesterday. The accompanying sketch will show you that almost all the cases of small-pox originated from one person, who traveled 319 miles on the Intercolonial Railway with a few miles across Baie des Chaleurs, and that these cases are confined to very few places considering so many poople were exposed to contagion.

We have actually 462 organized Boards of Health in this Province out of a possible 730, and instructions have been lately given to the remainder to organize immediately. Except in the case of the Jeffery Hale Hospital in Quebec, as soon as the diagnosis is made, the municipality notifies us immediately, and then our inspector visits the place and the municipality, rich or poor, has to obey our orders, of which I enclose a copy. Two sub-inspectors have been appointed, one for the county of Temiscouata and the other for the county of Rimouski.

At our request strict orders have been issued by the railway companies to their conductors who are virtually our inspectors. We give the widest publicity to all cases as soon as the reports reach this office. I will with pleasure notify you of every case as soon as ascertained.

Dr. D. G. Luce of Caribou, who went to the St. Lawrence region for this Board, personally visited St. Paul, the place the most seriously affected. He reported that at the time of his visit there had been thirty-five cases with seven deaths in that parish. "The spread from the first case is partially explained by the fact that it occurred at the postoffice, and members of fifteen different families were infected before the nature of the disease was known." Since then a few other cases have occurred, and, though the epidemic seems to be held well in hand, health officers in this State should for some time be on their guard against the possible importation of the infection.

Proceedings of the Sanitary Convention at Portland.

A joint convention of State and Local Boards of Health was held in the Common Council Chamber, City Building, Portland, Maine, October 27, 1891. As Dr. C. D. Smith, Chairman of the committee of arrangements, said at the close of the meeting, "the Convention was undertaken with the full knowledge that it was to be largely in the nature of an experiment, and the result is an agreeable surprise to the committee of arrangements" The Committee was composed of C. D. Smith, M. D., Portland, Prof Franklin C. Robinson, Brunswick, and J. O. Webster, M. D., Augusta.

The Convention was called to order by Dr. Smith, chairman of the committee, who introduced E. C. Jordan, C. E., of Portland, President of the State Board of Health, as President of the Convention. Mr. Jordon took the chair and spoke as follows:

Gentlemen of the Convention:

It gives me great pleasure to preside at a gathering of men who represent a force that has contributed, and is contributing, so much to the welfare and prosperity of this State.

The scheme of a sanitary convention is practically to demonstrate and seek to make evident the truth of the old maxim, (so familiar that we pass it by without giving it proper weight,) "Health is Wealth," that is, to quote approximately the words of a former President of the International Health Congress, "the greater part of our wealth is the *income* from *work* which is the *outcome* of our *health*."

Under such a stimulus we may safely aim to point out why certain things should be done or left undone, and in the progress of events, why certain other things should be done in a better manner.

Since purely philanthropic motives and entirely disinterested love for our fellow men does not seem always and in all quarters to prevail over selfishness, individual love of gain, and indifference to the welfare of the race, let us also keep steadily in view the teaching that *profit* lies in a wise course of preserving health or preventing death, and an escape from *heavy expenses* as well as the avoidance of suffering, agonizing suspense and bereavement.

It *pays* to keep a community well There is a doctrine for the hard-headed schemer who means to work men for all they are worth. In short, health means wealth and prosperity

In this State of Maine, whose growth is so conservative, it especially behooves us to act upon these facts. If we do not grow

like our sister states in the West by immigration, let us practise under the rule of hold fast all we have got and catch all we can; that is, let sanitation guard our health and make our labor profitable—and as for the acquirement hinted at in the above couplet, let us catch the summer visitor by showing him that ignorance is not a factor in Maine's equipment for a summer resort.

The welcome to this city in which the Local Board of Health has accomplished so much, though it must be confessed Back Bay still raises its protest to heaven, is cordial and sincere. It will now be officially extended to you by His Honor, the Mayor of Portland.

Mr. Geo. C. Burgess, City Clerk, in behalf of the Mayor, who was unavoidably absent, extended the formal welcome of the city. He also read the following letter from the Mayor:

"*Mr. President and Members of the Boards of Health of the State of Maine:*

"GENTLEMEN: I regret that a matter of private business will prevent my being present at your meeting to-morrow. You will permit me, however, very briefly to say to you that I am glad of the opportunity that my position affords me, of tendering you a cordial and a hearty welcome to our city, and extending to you the grateful thanks of our citizens for your disinterested and unselfish labors in behalf of the public health, and consequently of the public welfare. We can compute *in part* what you have done, but the innumerable ills you have prevented will never be known. In many instances, doubtless, it is a thankless task that you are performing, but that you are fulfiling it faithfully and well, the greatly improved sanitary condition of our State testifies in unmistakable terms You have searched diligently for the pestilent spots where typhoid fever had its breeding places, and when found, that wasting disease has disappeared with the causes that produced it. You have checked materially the dreaded scourges, diphtheria and scarlet fever, and "the slaughter of the innocents" has been greatly stayed.

For this intelligent and beneficient service, the city of Portland extends to you its heartfelt thanks, and bids you God speed in your noble work. Very sincerely yours,

GEO. W. TRUE."

President Jordan.—The work of the convention will now begin with various papers, the first of which will be:

The Experience of Local Boards of Health in Dealing with Contagious Diseases.

By CHAS. D. SMITH, M. D., member of Local Board of Health of Portland, and of State Board of Health.

The remarks which I shall make upon the topic assigned me will not be extended, but will, I hope, be of such nature as to suggest to my fellow members of Local Boards, to set before us their experience in the same line of work, and their conclusions after contrasting the practical with the theoretical.

The management of contagious diseases in their relation to the public health, is a part of the work of Local Boards, which is of as great importance as anything which such Boards undertake to accomplish. In no other line of our work do good results so clearly follow intelligent effort. Failure to exercise such well directed effort is followed in a great majority of cases by results the most unfortunate, and it must be within the knowledge of all of us with any experience in sanitary administration, that condemnation of failure is greatly in excess of commendation of success.

It is a curious fact which I remember to have been emphasized by a gentleman who will take part in this morning's session, my colleague on the Local Board of Portland, that the public are most clamorous for protection from, and are the soonest panic stricken in the presence of the disease, which in its natural history is best understood, is most easily managed, and from which they have the least to apprehend, namely small-pox, while against two others, more insiduous in their attack, more uncertain in their progress and the evil of their after affects upon their unfortunate victims, they often exhibit an indifference which is astounding. One of these, scarlatina, I *believe* to be the most actively contagious of the group against which we fight; the other, diphtheria, I *know* cannot be equalled for the uncertainty of its progress and, often, for the malignancy of its attack. Because we are yet unable to speak with reference to the latter of these diseases with that positive assurance with which we refer to small-pox, although the highest authorities and the great weight of experience insist upon the *fact* of contagion, we unhappily find at times our best intended efforts hampered by indifference, if not actual interference on the part of those whom we seek to protect. In communities with this peculiar disposition, it can only be the duty of health authorities to provide for, and guard against the possible danger, rather than to take refuge behind uncertainties.

I am anxious to learn what has been the experience of my fellow members, in the use of those powers which the law has placed in their hands for the prevention and control, and limitations of contagious diseases: to what extent have they received support or met with discouragement in their administration of the law, and how they have adapted it to their respective communities.

My own experience has been derived from a service of several years on the Health Board of this city both before and since the present system of organization, and from observation in different parts of the State of the trials and triumphs of other Local Boards.

Briefly stated, the practice in this city, when a case of diphtheria, scarlatina or small-pox is reported, is at once to give warning notice to the public by placarding the house in a manner conspicuous enough to attract the attention of every one who approaches by front or rear entrance. In this way this particular house has been isolated by a distinctive mark from the rest of the community.

The card is attached by the agent of the Board, and the family at the same time supplied with the circulars of the State Board containing information relative to the particular disease in question. Notice is also sent to the superintendent of schools notifying him in which school district the case is situated. A careful record is made of the name and age of the patient, street and number of the house, the date when reported and by whom, and the date when the placard was removed.

In connection with the record of contagious diseases, the secretary has prepared a set of cards showing by streets the exact location and time of appearance of every case of contagious disease, and has marked with appropriate colors on a map of scale 500 feet to the inch the location of all cases of contagious disease.

These records extending only from Sept. 1, 1886, do not afford sufficient data for profitable generalization, but will be useful as a basis for future study.

By this means the Board has accurate knowledge of every existing case, and abundant means of enlarging its information when ever deemed necessary. The card is not removed until the Board has assurance from competent authority, almost always the attending physician, that contagious disease no longer exists, and that measures of disinfection have been properly carried out. If the case has a fatal termination no public funeral is permitted. These rules are prescribed for the *public* welfare. With the immediate seclusion of the patient and management of the case within the

house, the Board does not meddle; it strives under all circumstances to avoid any appearance of encroaching upon the rights and prerogatives of the physician, and to his judgment it is left to decide whether that seclusion is sufficient to allow members of the family other than those in immediate charge of the sick to pass in and out, or attend to their ordinary avocations.

I do not know of an instance in this city where this confidence has been abused, or where the efforts of the Board have not been furthered and rendered more efficient by the co-operation of the physician. That this has not been true in all localities in this State, I regret to say that I have had abundant evidence, and this leads me to speak of another direction in which Local Boards must exert themselves, if they expect to reap any harvest from their labor, and that is toward cultivating a favorable public sentiment toward sanitary work, and a public sentiment which is not only favorable but aggressively earnest that such work shall continue.

It may be asked, "are cases promptly reported?" My testimony will be that they are, in many instances even, when the physician's attitude is only one of suspicion.

"Is the quarantine strictly observed?" I believe in the great majority of cases it is sufficiently to accomplish the desired results. Occasionally complaint has been made that such was not the case, but these complaints are growing less and less.

"Are the efforts of the Board impeded by interference with the inspector, or by unauthorized removal of the placards or refusal to have them attached?" My answer would be that not more than twice has any attempt been made to remove a card, and those were satisfactorily explained.

"Are public funerals actually prevented?" Yes, and in this direction most efficient assistance is rendered by the clergymen of all denominations, the physicians and the undertakers.

To return for a moment to the specific measures:

1. Placarding; our Board has found that the results have amply justified the adoption of the measure. It has acted as a warning of a point of danger. It has kept away meddlers, and secured quiet to afflicted families, and given them an opportunity to devote themselves uninterrupted to the business in hand, which is nursing the sick and ridding themselves of the disease. Less and less objection has been raised as the advantages to be secured have been demonstrated. The idea of any disgrace bestowed by the presence of a card has passed away, and people, even the humblest,

know that small-pox, diphtheria and scarlatina, are not classed among the diseases which mark their victim with disrepute. And they are also pretty well imbued with the belief that although a misfortune, the possession of any one of these does not convey any privilege of concealment or menace to unsuspecting neighbors.

2. Notification to Superintendent of Schools. We believe that by maintaining this practice we accomplish the exclusion from the schools for the time being of other children from the same family, and so close another avenue by which infection may escape. If the physician in charge does his duty as it is found he does, we believe the children who attend school will surely be protected, and those who are compelled to remain at home be comparatively safe. The protection of the greatest number is the end desired.

By the maintenance of proper restriction about the sick room, and judicious exclusion of children who, though not themselves sick, have been exposed to the disease, and may at any moment become a source of further danger, it has never in our judgment been necessary, I may add wise or prudent, to close the schools on account of contagious disease.

3. Disinfection and removal of the card. This removal is made together with all restrictions when the attending physician certifies to the Board, the termination of disease, and the performance of proper cleansing and disinfection. If such measures have been satisfactory to the physician his certificate is accepted without question. If circumstances of poverty or ignorance prevent the family from executing such disinfection, the Board at its discretion furnishes a proper person to do the work, and bears the expense. There is no quibble as to who shall pay. Disinfection is what is wanted, and the question of expense or supervision is not allowed to stand in the way of securing it.

Again it may be queried, "does all this accomplish the object of preventing the spread of contagion or the after outbreak of disease at the same place?" I believe that it does, not because that belief is naturally most agreeable to me as a member of the Board, but because of certain facts which I shall state to you briefly.

How far it may be due to any one of these factors more than to another, I can not affirm, but I do know this—that since the adoption of this systematic plan of dealing with these diseases, there has been a pretty constant decrease in number of cases and relative number of deaths, the management of these cases in both public and private relations has been easier for both physician and

Board of Health. Of this fact the secretary has had voluntary assurance from numbers of medical gentlemen whose opportunities of experience and observation entitle their opinions to the greatest respect.

During the year ending Feb. 28, 1888, there had been an alarming number of cases of both diphtheria and scarlatina, due I believe to the utter lack of anything like isolation in a great many cases. Up to the date named there were of diphtheria 131 cases with 34 deaths, scarlatina, 67 cases with 7 deaths. The present ent system was adopted, and the next year ended with diphtheria, 59 cases, 15 deaths; scarlatina, 28 cases, 1 death. The next year ended with diphtheria, 60 cases, deaths, 7; scarlatina, 28 cases, deaths, 1; and the last year upon which we have tabulated any figures ended February 28 1891, with diphtheria, 30 cases, deaths, 5; scarlatina, 9, deaths, 1.

These figures are significant, for after such an epidemic as we experienced in 1887, we might not unreasonably have looked for a greater recurrence, but during the latter half of that year some vigorous work was carried out, and we believe that we are now profiting thereby. Should we now have at any one time more than two or three sporadic and widely separated cases of either of these dread diseases, the inquiry would be most searching, and the efforts to probe to the bottom of the fault indicated would be most persistent.

The question of placarding individual dwellings has suggested that of a general quarantine against danger menacing from without. Undoubtedly the place where quarantine should begin is in the immediate vicinity of the patient, at his bedside in fact. Unfortunately, it sometimes happens, as when Canada was so persecuted by small-pox six years ago, that our neighbors do not keep their diseases to themselves as closely as we wish, and it becomes necessary to guard against infection from without. This is not so easy, for the demands of commerce and travel interpose obstacles to which our methods of procedure must in a measure be adapted. Travelers, their baggage and articles of commerce from infected localities sometimes gain access to our community, and we must lay certain restrictions. If we cannot prevent in all cases evasion of our prohibition, we can prescribe the manner of coming.

The policy of our Board during the threatened invasion of small-pox alluded to, was to maintain a system of inspection of passengers over the railway which provided the thoroughfare from the

infected district, and vaccinate every individual without proper voucher from the United States inspector at the Canada line; if this were refused to compel them to return, or at least to remain outside the city.

This we should do again, and avail ourselves of that provision made in section 4, chapter 14, Revised Statutes, which provides for this very emergency.

It is a source of mortification to me as a member of the Board of Health of a city of 40,000 inhabitants to be compelled to admit that we have not within our borders a building suitable to receive a person afflicted with contagious disease, or afford conveniences for proper disinfection of clothing or bedding. Such a building should be maintained in every community as well for scarlatina and diphtheria as for small-pox, when occurring among the pauper class, or those who are so unfortunate as to fall sick within our gates.

At the present moment lower Canada is afflicted with small-pox; never before have the avenues of approach to our State been so numerous, and it behooves every Local Board of Health in Maine to decide what its plan of action will be if a case of this disease develops within its jurisdiction.

Mr. President, I am warned that I have exceeded the limit which I had drawn for myself, but so many points suggest themselves that it is difficult to decide what to include and what to omit.

I am aware that the management of this class of diseases is affected to a great degree by circumstances of locality. Country districts, especially where the inhabitants are scattered, can not always be under such sanitary supervision as is secured by the compact character of large towns and cities with their various provisions for rapid transit, and their greater resources of communication and ability to bear expense. Still I do not hesitate to challenge examination and comment from competent judges of the manner in which the Local Boards of Health in this State with few exceptions have administered the sanitary law entrusted to them four years ago, particularly those portions which relate to the class of diseases under discussion.

The success of men of every day affairs, for the most part not trained to such work, and having nothing of experience from which to draw, in handling as they have outbreaks of contagious disease is remarkable.

Mr. President and gentlemen, I hope I have not appeared to speak of the Board of which I am a member in a manner at all boastful or to mention its work in a spirit of self-congratulation; nothing has been further from my thought, but it has been my aim to outline how we have worked here with all the advantages of concentrated organization, liberal appropriations from the city to defray expense, and a hearty support from public sentiment, for which I am sure the other members of the Portland Board will be glad to have me at this time make free acknowledgement.

I know it cannot fail to be profitable to us to hear from our coworkers, many of whom enjoy the same advantages and encouragement in their work, and some of whom have wrestled not only with disease, but have been cramped in directions whence they had a right to expect support and approval.

President Jordan announced that the paper was open for discussion, and called upon Dr. F. E. Hitchcock of Rockland to open it.

Dr. Hitchcock said: Mr. President, I am afraid you made an unfortunate selection in calling upon me to open this discussion. As to carrying out the objects of the Board in Rockland, I think the principal criticism should be directed to the heads of departments in the city government. I think I can illustrate that by my report of 1890. Our Board was composed of Attorney-General Littlefield, O. H. Tripp, a civil engineer and myself. We had a mortality of 17.9 in 1889, from all diseases. In my report last February I stated that there was no mortality from diphtheria, none from typhoid, and but one case of scarlet fever, and none from small-pox; while our mortality was reduced to 15 per thousand. I had a vote of thanks from the city government, was re-elected for four years, and my salary was cut down one-half. I spoke to the Mayor about coming here yesterday, but it seemed to me to be rather an indifferent matter to him. I told him that the principal criticism by the Board would be directed to the city government.

We had no typhoid fever in town, except imported cases, owing I think to our improved water supply. There were certain portions of the town supplied by wells where typhoid fever was frequent, but ceased after the water supply was put in. Diphtheria has ceased to exist for the last two years. Scarlet fever has been somewhat epidemic, but very mild.

The acquiesence of the people as to placarding is much in advance of the acquiesence of the city government in paying the bills. We have no means for disinfecting except by paying it out of our private purses. We have seventy-five dollars divided among three of us. I have urged the appointment of an inspector but there was no notice taken of it. Great difficulty is experienced in getting the city government to move in these matters. For instance, I found our lockup in a very bad condition, and I repeatedly insisted upon its being cleansed. No notice was taken of it until finally I took the keys and kept them until they agreed to clean it up.

My principal opposition I think has been in public places. Occasionally there have been cases where they have come and told me that they had conducted a case of zymotic disease through without the attendance of a physician. Such cases are less frequent now, for I have always made a thorough disinfection to the extent of renewing the paper and whitewashing the house, making it quite general in the house because we didn't have the evidence of a physician as to locating where the disease might be. I find that such action as that has made notification much easier. Since the visit of our President we have had a very good sewer system which has been improving every year, and has made a great change in regard to the prevalence of disease in certain localities, where we had a brook which was appropriated by the city and diverted from its proper purpose. Along its track zymotic diseases were somewhat severe, and especially cases of diarrhoea in summer. The brook was first washed out and finally abandoned.

I will close by repeating my original proposition, that one of the principal points to be aimed at is to educate city governments as to the importance and value of human life—that the saving of four lives in a thousand means so many dollars and cents. I think perhaps the effort of the State Board of Health in educating legislators, mayors, aldermen, councilmen and selectmen of towns, as to the importance of human life, is one of the principal efforts that should be made.

President Jordan.—I was very much impressed at the meeting of the American Public Health Association, with the remarks on this question of placarding. I recall very distinctly in the reports from different sections of the United States accounts of its resistance. I felt that we must have a greater degree of intelligence than other communities. That special feature, the question of the

support that various health officers have received from their communities, I think we should have in full in the discussion.

Mr. Geo. C. Burgess.—Mr. President, one small scheme of prevention was omitted by Dr. Smith and I do not know exactly what its value is.

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By the request of the trustees of the public library, the clerk of the Board of Health notifies the librarian upon the occurrence of any one of the diseases of diphtheria, scarlet fever or small-pox, immediately by sending him a postal card. That is filled out in the same form prescribed by the State Board. Whether that has had any effect of limiting or decreasing the number of cases I do not know, but it is invariably followed.

Speaking of placarding the house, we have had such an experience in this city that it would be a very interesting thing for me to know from every member present what has been his experience. In our own city at first, the Board itself entered upon it with considerable fear. We made at first a provisional rule that whenever the physician recommended it, we would placard the house. I see by my records that ten days afterwards, during the prevalence of that outbreak which Dr. Smith spoke of, as in every case the physician recommended it, we passed a general rule requiring it in all cases and we have followed it ever since. The growth of public opinion in regard to placarding has been remarkable. There was a good deal of shrinking from it, and we were repeatedly approached and asked if it could not be omitted if they would promise upon their word and honor that no one should come in, and no one should go out of the house. But we always proceeded upon the rule that what was good for one was good for another, and we have made no exception whatever. Now, if we should omit to put a card upon the house, I believe in nine cases out of ten we should be asked by the people themselves why we didn't send a card to them. Certainly, if we did not, we should be reminded of it in a very short time. If, for any reason the inspector is away from his office and the house is not placarded within an hour or two of the report, I am sure to hear of it from the attending physician.

Some amusing things have grown out of it. In one case the lady of the house objected to having the card put on. They had a long run of scarlet fever. The physician reported the house and the inspector went down to remove the card. The lady asked if the card couldn't remain a few days longer, said she had some sewing to do, and she had had such a blissful state in living there

without interruption from inquisitive neighbors, that although the cure was effected she would like to complete her sewing, and would like to have the card remain on three days longer.

Another case was that of an alderman, one of the kind that Dr. Hitchcock spoke of, who didn't believe in the thing at all; his son was taken with diphtheria, and he wanted to know if he had got to be served like other people. I told him I knew of no reason why he wasn't as good as any other man, nor why his family should not be protected as well as others. We placarded the house rather against his objection. The diphtheria had a short run and the patient made a good recovery. When we sent down the inspector to take off the card he came back with the message that this man said that he was glad the card was put on because for two weeks he had been relieved of the presence of Jew peddlers who in his neighborhood were a terrible annoyance.

But that is outside. It shows, however, what a complete change has taken place, for instead now of meeting with objections, it is considered a very desirable thing to do. I should like to know from every member present whether in any town or city placarding is omitted. We have found one case, and one only, where it was necessary for the time being to make the house a hospital. That gives us an additional security because we can enforce under the hospital rules measures that we could not under the general law.

Dr. Fuller of Bath —Mr. President, we have had some difficulties to meet in Bath that have not been found in Portland. I think we have not the sympathy of the public there that you have here, and we have not received the same co-operation. In the first place the trouble, as Dr. Hitchcock remarked, is in the city government. The city government is a long time in making appropriations, if any are made. I remember when I was elected a member of the Local Board, the first year I served I paid $10 for clerk hire in making out my report. When I presented my bill I was informed that there had been no appropriation for the Board of Health that year, and consequently I would have to scratch for pay for my clerk. The next year, which was two years ago, an appropriation of $75 was made for the Board of Health. I informed the city government that I should n't do the clerical work unless I could receive enough to pay the actual expense; and so they did appropriate $75, and I suppose this year I shall revel in luxuries on that account.

In regard to placarding the houses we have had a good deal of difficulty in Bath. In the first place we meet with opposition in-

variably from the people who occupy the house. We haven't got them educated up to that fine point which you represent in Portland. It is somewhat difficult to educate the people to the necessity of keeping indoors during an epidemic.

There is another trouble. There is difficulty with the physician. There hasn't been a case of infectious disease reported to the Local Board of Health in Bath since the organization of the Local Board. It was one reason why the original Board resigned, because the physicians would not co-operate. The only way we find out now is by making inquiries. The diseases are not reported generally by the physicians outside of members of the Local Board. As a general rule I think the physicians are careful in regard to quarantining the house, but there is no extensive co-operation with the Local Board.

Mr. Burgess.—Do they give any reason for not doing so?"

Dr. Fuller.—No, but it gives them some trouble, and they don't propose to do it on general principals. So there are local boards of health that do not have so easy a time as you have here in Portland. Still our Local Board has the courage at the present time to do what they think is right, and we have a city marshal who acts as health officer, and who has the nerve to do about what the Local Board directs.

On the whole I think the sanitary condition of our city has been improved since the local board has been at work. Certainly the infectious diseases have almost disappeared. I think there has been but three cases of typhoid fever this year in Bath, one of which was fatal, and two recovered. I know of no case of scarlatina, but I did hear day before yesterday that a physician had a case of diphthertic throat. I find that term is a very good one for some physicians and for the laity to use in a case of diphtheria.

When the physician has a typical case of diphtheria he gets over it and saves quarantining the family by saying that it is a slight diphtheretic throat. These are things that need looking into by the State and Local Boards of Health. There is mischief in the air when a physician uses the term "diphtheretic." If it is diphtheretic it is diptheria, and if it isn't diphtheria it isn't diphtheretic.

Dr. Sturgis of New Gloucester.—Mr. President, the Board of Health of my town has had very little to do during the years this law has been in operation. We have had very few outbreaks of contagious diseases, and whenever those have occurred the Board has followed the directions laid down by the State Board of Health similar to those outlined by this paper. We have never in any

case met with any opposition from the people. In all cases so far we have succeeded in keeping such diseases as scarlet fever, diphtheria and typhoid fever confined to the families in which they originated. The public men of the town uphold the Board of Health in their work, and so far as the payment of any bills incurred for fumigating or anything of that kind is concerned, they have always voted to pay them at the annual town meeting without question. The only troubles we meet with in this way is in keeping members of the family who go in and out of the sick-room away from outside people. We have found it sometimes difficult in cases of scarlet fever to keep the parents from going about their work from day to day, and have sometimes feared that in this way contagion might be spread. However, so far, we have not had any such results, and our work has been satisfactory.

Edgar A. Russ, of Dexter.—Mr. President, we have had a little bit of experience in our town with scarlet fever and placarding houses There is in our village an apple evaporating house. Parties came from New York and brought a family of three children. They entered our school, and on the second week after their advent to our town, a well defined case of scarlet fever was reported to our Board of Health. The case was in one of our hotels. To let it be there was an injury to the public and a detriment to the man's business. I went to him and mentioned the fact that such a case had been reported. He said it was no such thing, it was just a little cold with some humor. I sent the physician on our Board to consult with the attending physician, and he reported that it was a well defined case of scarlet fever. We had the case removed to another house and the rooms disinfected and our placard placed on the door. Unfortunately we got the case into a house where there was rather a strong-minded woman in relation to such a matter as that, and the orders that she issued were peremptory that there should be no such card placed on her door. Feeling our insignificance we set back and braced our feet to see how we were situated. We found that we had the right to put it there. We had made one of our town constables a health officer, a slow, moderate fellow, hard to anger; and he took it and went there and placed it on the door. As he was driving the last tack she said to him that in one hour after he left she should remove the card. Shortly after I had occasion to go past the house, and the card had been removed. There was where it was necessary for us to ask the co-operation of the town officers. We found them ready

to stand behind us. They said "if it is necessary to check the scarlet fever, or to keep it in the house where it now exists, board up the road if the law gives you the power. Take our town constable and place him on the doorstep of that house and see that the card remains where it is placed." That is the way our selectmen stand behind us. We have no mayor, no aldermen, no common council, but three men not entirely destitute of the elements of common decency. [Applause.]

Well, we placed the card in the hands of the officer, and he placed it upon the building. "Here, here, what are you doing," said the old lady. "My instructions are to place this card on this house and stand here until six o'clock when I shall be relieved by another man who will stand here until six o'clock in the morning to see that this card remains here." It is needless to say that we had no further trouble with that card. We got the critter by the horns. We confined that case to that house and there was no other outbreak. Since then they have been willing to have cards placed on the doors, and have come to the conclusion that if they were mistaken it was better to mistake on the safe side.

We have some little difficulty with physicians. By the way, in this case they called in two other physicians so late that it was a difficult matter in my opinion for them to decide whether there had been a case of scarlet fever or not, and they reported that it was not scarlet fever and that there had been no scarlet fever. That was after the desquamation had taken place and the children were getting better. That of course annoyed us some. We have no system of sewerage in our village. The village is situated between two hills in a valley at the outlet of Silver Lake. Our two main streets are on the side of the hill. On the upper side of both of these streets there are more or less sink spouts emptying their contents into the cellar drains and from there to the streets. Complaint has been entered time and time again. We wanted the selectmen to take some action but they said they had no appropriation. We found we had no law by which we could compel people to pay who entered their private drains upon the streets. But we got up a subscription and I think we have laid about 200 feet of sewer.

Dr. Smith.—I would like to hear a few remarks from a gentleman who is not connected with board of health work, as to his opinion of the efficacy of placarding. I call upon Dr. Warren.

Dr. S. P. Warren, of Portland.—I am sorry I did not hear Dr. Smith's paper. It is not necessary for a Portland physician to

speak on the question of placarding here because we all believe in it. We believe in it because, while it interferes with our business somewhat, it makes the city healthier. For instance, diphtheria is comparatively a rare disease in Portland. I haven't seen a case for two years. Occasionally we see a sporadic case reported, but it is proof positive that when that case is reported there will be a card on that door. That means "Keep away from the house." I had a case of diphtheria a number of years ago in one of the most popular divisions of our city, a very malignant case. I confess I am afraid of it. I don't like to look at it, and I didn't look down that child's throat but once; all I could see was diphtheretic gangrene. The child died. I was in the same house three days afterwards and found a big wake going on. I asked what it was. They said this was the child that died of diphtheria. The house was jammed full of people. The child laid dressed as a child naturally would be, and it had been in that condition ever since it died. Everybody had been in, and every person that wanted to, had seen the child, and what was there to prevent the spread of that disease to the whole neighborhood? I can assure you that in this city the placard has stamped out, in a great measure, diphtheria I believe the trouble is now not so much with placarding diphtheria and scarlet fever, but some other diseases, for instance, consumption. I know a man, a good, honest, hard working man, the father of five children. His wife was born with scrofula, it is true, and every one of her children have been infected with it more or less, having the common symptom of enlarged glands in the neck Every one of the children have had sore eyes ever since they were born. Three or four of them have had abcesses under the throat, or in the side of the neck. About two years ago I was called to see her brother who had consumption and died of it three weeks ago. About a year ago I was called to see the woman's father who unquestionably has cancer of the liver. Now, think of that house. The oldest child is about nine years old, and for the last six months has been raising blood, and has a hard cough now. Now, that man who has died of consumption has had to live with the children in that same house, and I believe that the children are all thoroughly poisoned with the expectoration that has come from that man. I believe that in such a case the man should be taken and put into a hospital immediately after he is found to have consumption, and thus save the lives of some of the children. I be-

lieve the house should be placarded so that people would not be coming and going. When our country people and city people begin to appreciate that human life is just as valuable in dollars and cents as animal life, we shall expect to see this matter taken hold of and exhibited in its true light.

There are sixteen cases of typhoid fever near by the city reported in six houses, all within a circle of a quarter of a mile. One of those cases I have, and that man's life is worth something to his employer, measured in dollars and cents. How much of that waste of money value could have been saved if there had been years ago some sanitary measures carried out in that locality.

At first there was some opposition to placarding and people got mad at the doctors. But that is all over, or nearly so, and I believe the system of placarding has broken up certain diseases such as diphtheria. I hope that by and by we can have a chance to placard typhoid fever and I hope that phthisis will be brought into the list.

Dr. A. K. P Meserve, of Portland.—I am not going to say anything about Dr. Smith's paper, being on the Board with him. But the thought came to me why the Bath physicians are different from Portland physicians in the matter of reporting contagious diseases. We have been met so cordially by our physicians that it is wonderful to me that there should be such a difference in a city so near as Bath. The Chairman has asked for the experience of country physicians. To my knowledge a little circumstance has occurred which perhaps I ought not to speak of, but will. A physician, in a town not far from Portland, had a few years ago a case of sore throat which he did not report as a case of diphtheria. Then he had five or six of them, and the Local Board suspecting that there might be something more than sore throat, had an examination and pronounced it diphtheria. The physician insisted that it was not, and would not report them. The result was that no cards were put up and one of the patients died. The whole neighborhood felt very much incensed against the physician because he did not report the case, and it resulted in his leaving the village and a good practice. Perhaps the leaven is working to prove that placarding and reporting is for the benefit of the physician. I hope there is no physician in this city that would refuse to report a contagious disease. If any physician in Portland fails to report a case and it is discovered by the Board, a very quiet note is sent asking him if he has not neglected to report, and he gen-

erally comes down and apologizes, and says he forgot it, and we get the report at once.

Mr. Geo. C. Burgess, of Portland.—I would like to ask Dr. Fuller if his Board has ever tried the remedy provided by subsequent legislation to the passage of the general law, by which the Boards are relieved from any personal responsibility by simply communicating to the county attorney the name of the physician who has neglected to report a contagious disease. I think that would be the course taken here, and possibly by all of the Boards in this immediate vicinity. The name of the offending physician would be given to the county attorney, and I am quite sure from his sympathy with the work of the Board he would give it his immediate attention, and the Local Board would not need to give themselves any further trouble.

Dr. Fuller, of Bath.—We haven't taken advantage of that, but I had a correspondence with the Secretary of the State Board, and through him communications have been sent to physicians in charge of these cases. I think perhaps our people do not take to sanitation as readily as they do in a good many cities.

Mr. Burgess —At the risk of speaking too often I wish to say that one thing has surprised me above all others, and that is the report that has been made here of the unwillingness of the municipal officers to share in the work of the boards by making appropriations, or at least giving them their sympathy because it is so entirely opposed to what we find here now, or have found from the beginning The city of Portland makes an appropriation of $1800 for the use of the Board which they may expend at their discretion. So far as I know, the sympathy of the entire boards, the Mayor and Aldermen and Council, is in favor of the Board of Health. The president of our common council is here this morning and I should like to hear from him as to what the feeling of his Board is.

Mr. Charles A. Strout.—I thank you, Mr. President, for the unexpected honor, but it would be like carrying coals to Newcastle for me to attempt to say anything to this convention about sanitation. So far as the lower Board of this city is concerned, I feel that I can honestly say that we are all heartily in sympathy with the work of our Local Board of Health, because we feel its importance to the citizens of Portland as well as to everybody that comes here. Of course, according to our ordinances, the upper

Board has the direct supervision of this matter, and the lower Board only assists in the matter of appropriations; but I feel assured that the lower Board would do anything they could to assist in the work outside of the mere appropriation. I think the Local Board will testify that so far, we have always shown ourselves ready and willing to assist them in every way possible.

President Jordan.—The Chair has been content that considerable time should be devoted to the discussion of this subject, because it is one of great importance. He will be obliged however to ask Dr. Smith to close the discussion.

Dr. Smith.—It is needless to say that I have been much gratified by the discussion which has followed my paper. I am grateful that it has awakened in you such an expression of interest in the work. In reference to a few points brought out, I wish to say a few words further. The point which Mr. Burgess brought up, with reference to notifying the public library, I should have mentioned, but it was an oversight on my part in reading somewhat hastily. I am not surprised at the Secretary of the Portland Board asking Dr. Fuller so promptly what measures his Board had taken to compel the physicians to report cases, because the Secretary of the Portland Board, ever since I have been with him, has been thirsting for an opportunity to prosecute somebody. But I am happy to say that the Portland Board, although perfectly willing if the emergency should arise, to take the responsibility, has never yet been able to make a test case in any line of our sanitary work. The facts of the case are these, which will account for this in a great measure: the city of Portland wants sanitary measures carried out. We have a public sentiment in this city which is the growth of long and careful and patient work—a sentiment which, in sanitary matters, demands that everything that can be done in the line of sanitary work shall be done for the benefit of the public. The Portland Board of Health has always had the heartiest co-operation from the city government, of the physicians of the city of Portland, and of our citizens generally. The members of the Portland Board of Health do not get one copper for the time and labor they put into the work; the Secretary is paid a nominal salary from the general appropriation, and we employ an inspector at three dollars a day to carry out the work of the Board. The other members serve because of their interest in the work, and the fact that they have continued to serve year after year is pretty

good evidence that public sentiment has backed us. If that was not so we could do nothing.

I am glad that several points in my paper have received the attention they have. As shadowed forth there, it is my firm belief that the place to make the quarantine effectual is at the bedside of the patient. If the physician in charge of the case begins his quarantine at the door of the room, he has one half of the battle. In reference to the remark of my friend from Dexter as to the attitude of physicians, I flatter myself that I have a pretty thorough acquaintance with the physicians of this State. As a member of the State Board of Health I come in contact with a good many Local Health Boards in different sections. I am free to say that there have been localities where serious trouble has arise neither from ignorance or wilful inattention of some physicians to their plain duty under the law, but it is not true of the great body of physicians in the State of Maine. I think as my friend Dr. Warren intimated, whereas, at first these restrictive measures instituted by the State Board of Health may have caused physicians some little inconvenience, some disturbance of the harmonious relations between physician and patient, because the patient objected to having the physician report the case, and thought he could conceal it if he chose, still, on the whole, the physicians have honorably and manfully done their part in maintaining the integrity of the law. [Applause] I want to say further that in these days of enlightened views with reference to contagious diseases, when you meet with a physician, who, in expressing his views touching diphtheria and restrictive measures, talks about the "bichloride humbug" and that sort of thing, you want to be like the Levite and pass by on the other side; have nothing to do with him and take no stock in him. A certain town in this State had suffered from an epidemic, and I went to see if I could ascertain the cause. Soon after my arrival one of the physicians called upon me and gave me the key within five minutes. I said "What has been your practice about reporting cases?" He said "We haven't reported cases at all until the selectmen asked us to as a favor to them." I asked him what they had done in the way of restrictive measures. He says, "Do you think all this bichloride humbug is necessary in a disease so feebly contagious as diphtheria?" I told him life was too short to discuss whether diphtheria was contagious, but that he wanted to understand that when a case of contagious disease occurs, the law of the State of Maine says that

certain things must be done by certain people, and until he got the legislature to repeal it, we have no other course but to do what the law says.

Home Sanitation.

By A. K. P. Meserve, M. D., Member of the Board of Health of Portland.

Mr. President and Gentlemen:

In the few moments I propose to occupy in speaking upon the subject of "Home Sanitation," your attention will be called in the main, to three things of the most common use in every day life; and in many of the homes of our State, having a relation to each other that demands most careful consideration, and often a radical change.

The difference in the surroundings and conveniences of urban and suburban residents are such that what would well apply to one, would be out of place, nay, even impossible for the other. Indeed the country and village home often present such differences of environment, that the same methods cannot be recommended in each.

Leaving out of consideration all homes that have a sewer connection or a piped water supply, and for lack of time, the equally important considerations of soil dampness, heating, ventilation, etc., your attention is invited to the well, the sink, and the privy.

The great majority of the homes in our State, outside the cities and larger villages, are so situated that well water must be used for all domestic purposes; and I think that no one will dispute the assertion that water from a well polluted by drainage from sink or privy is unfit for family use.

The two elements of convenience and purity are often opposing factors in determining the location of the well, or rather its continuance, since in most cases convenience alone has already determined its location.

Sanitary engineers have given the surface diameter of the cone of filtration, for a shallow well, as twice its depth, or in other words, no possible source of pollution should be allowed within a distance from the well's mouth equal to its depth. This is an arbitrary rule, correct perhaps in some instances, but modified by so many circumstances that it is of little practical use. In a light, porous, sandy soil this rule might be accepted as probably safe. If the well is cut in a ledge of rock (most of the rocks in our State being stratified), then the distance may be too large or too small,

according to the trend of the strata; surface water might follow a seam or fissure in the ledge from a point on the surface many times the depth of the same fissure in the well, while on the opposite side a source of pollution very near the well could not possibly enter it, but would flow off in an opposite direction.

The kind of soil in which it is the most difficult to predicate the distance and direction of surface pollution is when the cutting is through strata of clay, these are so irregular and broken in their trend that what seems a safe distance may be no protection at all.

The reader was once consulted in relation to an unpleasant odor of the water from a family well. A sample had been sent to some chemist in Boston for examination, who reported that he could find no cause for complaint. A glass of the water freshly pumped was presented, and the immediate answer was "Your sink is discharging into the well." Impossible," said the man, "the sink drain empties fifteen feet from the well upon ground at least four feet lower than that where the well is and has a good draught directly away therefrom." The persistency with which the belief was reiterated (the country sink spout smell being unmistakable), resulted in the taking up of the platform covering the well, and at about eight feet from the surface, and some three or four feet only below the level of the point of discharge of the sink waste, was a broad band embracing nearly one half of the circumference of the well, below which the rocks with which the well was lined, were completely covered with slime and grease from the kitchen sink, the outflow from which had evidently for a long time been taking this short cut to deep water.

The surface soil was a gravelly loam, and to the superficial observer the arrangement would have seemed safe, as the surface fell off very rapidly to a small open ditch conveying the surface water from a field to a small brook a short distance away.

The danger of pollution from the privy is nearly as great as from the sink, and if the pollution does occur, it is of much greater danger. It may be thought that water from a well polluted by night soil would not be of a character to be drank at all, but such is not always the fact. A large hotel in a distant state, standing upon an eminence of some twenty feet above the surrounding country, had modern water-closets put in it, flushed with water from the well which was in the yard at the rear of the house, the water being pumped into a tank on the roof. A drain was laid to a small brook in the valley below to carry off the water, soil, etc., and the house of some 125 rooms was for several seasons filled with guests of the

better classes. One spring just before the close of the season, a case of typhoid fever occurred in the house, a young man, who made a good recovery. The guests soon left for their homes, but alas, on the way some, and others after arriving there, were attacked with fever of a very severe type. Some fifteen persons in all (including the manager of the hotel himself), had the disease, and all but two or three died.

An examination showed that the drain was carelessly laid, and that it leaked near the well, which thus became polluted. Its water was drank by the 100 guests, more or less, without suspicion of anything wrong, and had it not been for the outbreak of fever, would probably have continued in use, as there was no known complaint made of its taste.

Another cause of complaint, if not of actual sickness, arises from air contamination by the decomposing matters of sink or privy. I am aware that it is more easy to inveigh against these conditions found in so many of our homes, than to suggest practical means for their improvement. Still much can be done to improve, if not to perfect these conditions.

And first of the sink, it should be tight with enough inclination to drain easily and completely through a spout or pipe, with a trap somewhere in its course to keep out the odor, and of sufficient length to convey the water to a point sufficiently removed from well and cellar, if possible, to be safe, and where it can be treated in different ways according to circumstances.

If it can be carried to a stream of running water of such size that the sewage becomes oxydized, and no precipitation occurs upon its banks, this method will give less trouble than any other. A closed and tight pit, covered to protect from rain, and containing dry loam or swamp muck gradually thrown in as it becomes wet, and when saturated, promptly removed for agricultural purposes, would be an excellent method, were it not for the fact that it would be very apt to be neglected and to become a nuisance.

Then there is the cesspool, tight and leaching, sub-surface irrigation, or absorption through porous tiles just below the surface, and what is most common of all, discharge upon the surface of the ground

The tight cesspool is a safe method, if properly cared for, but demands more constant attention than any other. It must be emptied before it is full to over-flowing, either by pumping or dipping, and its contents either spread upon cultivated ground or carted to a safe distance. The leaching cesspool is entirely con-

demned by many sanitarians, and it is only in exceptional cases that it can be recommended or allowed. In a porous soil, at a safe distance from well and cellar, and where a system of under drains can be laid a foot or two beneath the bottom of the cesspool, it may be allowed in its most primitive form, viz.: A half hogshead sunk in the ground in an inverted position and covered with a foot of earth. Its location should be changed two or three times a year to prevent saturation of the filter.

Perhaps the best method of all is sub-surface irrigation, when the location admits of it. A series of parallel or radiating drains of two inch, unglazed, earthen drain pipe, is laid about one foot below the surface of the soil and connected with a tight receiving tank, and with some device, as a siphon or tip tank, so that the discharge will be of an intermittent character. The drains should be laid with only a slight inclination, and the ends a small distance apart and covered with something to keep out the soil and permit the escape of the water. The object of the intermittent flow is to fill a large portion of the drain at the same time, so that the portion nearest the tank shall not become clogged or saturated by the constant dribble of the water into it. As to the length of drain required, much would depend upon the character of the soil. For an ordinary family of six persons and in a fairly porous soil, probably 100 or 150 feet would be sufficient; if the soil was tough or clayey, more would be required, and in this case the area should be thoroughly under-drained.

The absorption area can be utilized for field or garden although if ploughed it must be shoal furrowed, with the team walking upon the unbroken ground.

As to the last method, that of discharging upon the surface of the ground, it is the one least to be recommended, and should only be permitted when the water can be spread over cultivated ground and often stirred with the hoe to cover and prevent putrefaction, or else conveyed to such a distance from all dwellings or sources of water supply that no infection can possibly occur. If spread over cultivated ground, at least sixty-five square feet of ground would be required for each person.

As to the privy, the dry earth closet is undoubtedly the safest and best, where there are no sewers or water supply, other than that brought by hand. Next the barrel system, then the vault, if cleaned sufficiently often. And last, the ordinary small hole in the ground, with its disgusting odors, carried to long distances by currents of air, or often by its connection with the sills of the building

in which its personality is placed; often, too, the house slops are thrown in and rain water from the roof fills it up and so remains until by percolation it settles into the soil, carrying its filth, and often disease germs where it can the most easily go.

Who, then, can wonder at the different odor and taste of water from different wells? at the frequent occurrence of animal epithelia, or of chlorides, ammonia and nitrites? And what is the remedy? Study to place the well at a good, safe distance from any possible source of contamination, trusting to distance alone if in a sandy or gravelly soil. If in ledge, study its trend or slope. If in clay, which usually has to be gone through before good water can be obtained, line the upper part of the well with brick, laid in cement and thoroughly cemented on the outside, making their connection with the clay as perfect as possible to keep out the surface water, and so obtain the supply from below. But I believe best of all is the driven well, where it can be put down. It does not drain the soil around it so easily as the open cylinder, it always takes the water from the bottom, and is generally deeper than dug wells in the same soil. It affords no receptacle for animals, as the batrachiæ, which in dry times often get into the well and die, thus polluting the water before it is known.

Gentlemen, the subject is a vast and intricate one, it demands the best thought and experience of our day, the evils and dangers cannot be entirely removed, but let us study to modify and improve them. TO BE CONTINUED.

Drinks in Fevers.

Elderly persons tell surprising stories of the old time fear of giving cold water to fever patients. This has long since passed, and they now are permitted to drink freely. Still further than this, starting principally from the theoretical consideration that the poisonous products of the action of disease-producing bacteria in the infectious diseases may be got rid of by washing them out, a few physicians have tried the administration of drinks in very great quantities,—much more than the patients would voluntarily call for. For instance, *Dr. Valentini of Königsberg directs the nurses to give the typhoid fever patients milk, bouillon and water in quantities that would appear impracticable if mentioned. In addition to it all he has latterly given 200 grams of sugar of milk dissolved in a liter of water as a food and to increase the diuretic effect.

The results we are told are surprising. The concentrated renal secretion is diluted and increased and, even at the acme of the disease, its quantity is maintained at much above what is usual in fever. In milder cases the diuresis is kept somewhat above the normal, The patients were more comfortable than before the beginning of the treatment, and all the cases terminated favorably.

*Deutsche Med. Woch. XVII, 914.

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PROCEEDINGS OF THE SANITARY CONVENTION AT PORTLAND.

[CONTINUED.]

Some Points in School Hygiene.

BY DR. J. O. WEBSTER, MEMBER OF THE STATE BOARD.

(Abstract of the Paper.)

Heating and Ventilation.—To keep the air of a school-room in a reasonably pure condition, requires the supply of thirty cubic feet of fresh air a minute for each pupil. This involves a change of the air in the room eight or ten times an hour. In our climate, during most of the year, this air must be warmed before or after its entrance; and the subjects of heating and ventilation are closely connected. There is also involved the removal of the foul air.

The air may be introduced through a jacketed stove, sitting in the room, a furnace in the cellar, or boxes containing steam radiators in the cellar. The heated air, on entering, seeks the top of the room and gradually sinks as it becomes cooled, more warm air taking its place. The outlets for foul air should be at the bottom of the room, and must be connected with heated flues unless mechanical power be used. Both inlet and outlet flues should have an area of one square foot for every twelve pupils.

An ordinary house furnace will not supply air enough for school-room heating. Large air-heaters are made for this purpose, capable of furnishing large volumes of air warmed to about 90°. These are suitable for two or four-roomed buildings. For larger buildings, steam is preferable. For one-room schoolhouses, jacketed stoves must be relied upon; and these are now in the market, for burning either coal or wood.

Some very important practical points, which apply to all systems of ventilation, are these: There should be no valves in either the

hot air or ventilating registers, or other means by which the air can be shut off from the room by the teacher during school hours.

Every heating flue should be provided with a cold air valve, worked from the school room, by which the temperature can be regulated by the admission of cold air to the flue, where it will mix with the heated air and lower its temperature when necessary, without diminishing the amount of air supplied to the room.

All methods of ventilation dependent for their action upon heated flues are more or less defective and unsatisfactory; because their operation depends upon the difference of temperature between the in-doors and out-of-doors air. If they furnish a full supply of air in cold weather, in mild weather their action is impaired from the fact that the velocity of the current is slower. Only mechanical ventilation can be depended upon under all circumstances.

This is accomplished by the use of fans, moved by steam power or water motors, either in the basement, driving a given quantity of warmed air through flues to all parts of the building, or at the top of the building, drawing the air through the ventilating flues from the rooms.

The former method is theoretically preferable and practically much more satisfactory. It furnishes the exact amount of air needed at all temperatures; and the same amount of air must escape from the rooms through the ventilating flues, which in this case do not need to be heated. It should be applied to all large schoolhouses. Good examples of this method can be seen in the State Capitol and in the U. S. public building at Augusta.

The method by extraction of air—the fan at the top of the building—is in use in the Oak Street School in Lewiston and in the new pavilions at the Insane Hospital.

Dr. Webster next took up the subject of

School Furniture.—His remarks were substantially the same contained in his paper in the second annual report of the State Board of Health. The points most insisted on were: That each room should contain at least three sizes of desks; that pupils should be seated in seats adapted to their sizes, so that the seat is the height of the bend of the knee when standing, the edge of the desk the height of the bend of the elbow when sitting; that the edge of the desk should overlap that of the seat 1½ inches. The so-called "automatic" furniture was strongly condemned, as both dangerous and unnecessary. The "Boston" furniture—desks and chairs—

was, on the whole, given the preference. The rest of the paper is given in full and was devoted to some remarks on

The Management of Pupils.—Teachers should remember that their pupils, in the lower grades of schools are young animals, whose normal state, when not asleep, is that of constant motion, and that to make them maintain a fixed position for a long time is down-right cruelty; more than that, it inflicts permanent injury, for the bones and muscles are soft and weak and deformity is easily produced by constant pressure in any one direction. A school in which "perfect order" is maintained is an abomination; that is, perfect order in a sense of immobility of the pupils in their seats, and profound stillness permitting the fall of a pin to be heard. Much injury is inflicted by compelling pupils to keep their eyes fixed on their books. A normal eye, when accommodated to near objects, is in a state of tension and ought to be often rested by looking away at something not less than twenty feet distant. If this is not done disease is sure to occur.

Besides the ordinary recesses, free gymnastics should be judiciously employed, especially with young pupils. Deprivation of recess is not a proper punishment.

A class should not stand during recitations, as was formerly the practice, but only the pupils rise as they recite. Standing still is much more tiresome and injurious than walking, because in standing all the muscles of locomotion are contracted, whereas in walking they are alternately contracted and relaxed. Standing in the corner, as a punishment, should never be long continued.

The process of nutrition and excretion go on more rapidly in young children than in older persons and natural calls must be attended to oftener, and much more frequently in some children than others. With proper precautions against idleness or truancy, teachers should be very careful that no injury is done to pupils by refusing necessary requests.

School hours have been too long. It is a severe tax upon children to confine them six hours a day. In most cities the school day has been reduced to five hours and more and better work is accomplished than formerly. This change should be made wherever practicable, but in most country mixed schools, with their multiplicity of classes, it will not be found possible to complete the work in less than six hours. Even five hours is too long for the youngest pupils, say of six years and under, and they should be dismissed at recess if practicable.

The school age is much too low in this State, and time and money are wasted in trying to teach children that would be better off at home. A child under six years of age has no business in a school room, and if school life is begun at 7 or 8 it is still better. Teachers, while compelled to receive these little ones to their schools, should take care that the least possible injury results.

Teachers should look after the clothing of their pupils, should see that it is properly dried when wet and that out-of-doors wraps, especially rubber overshoes, are not worn during school hours.

In short, a teacher needs to be a student of sanitary science and to exercise constant vigilance against every danger to the health of his pupils.

The Proper Lighting of School Rooms.

BY JAS. A. SPAULDING, M. D., PORTLAND.

In regard to the lighting of schools there is nothing wholly new to be said, for all of these questions have been so deeply considered that they may now be regarded as settled. Still, like everything in this world, there cannot be too much reiteration of facts, nor too much repetition of the sum of our present wisdom, because there are so many new ideas coming down upon us in the rush of modern times that unless we review, as every scholar must do, what we have once been over, their is likelihood of forgetting what we once knew.

I intend, therefore, to review the important question of the best way of lighting school rooms, at least from my point of view, gained by considerable experience. It is hard to determine the standard of illumination desirable in school rooms without a photometer (measurer of light), but such are expensive and not absolutely necessary. I should say that to have a set of test type in every school room would be useful, because by knowing how far the type ought to be seen on a clear day, we could tell how defective the light must be in any room if the same type could not be seen but half so far. For ordinary purposes a few standard letters might be hung across the room, and if they could be seen as they should be, then the room may be assumed to have sufficient illumination.

Let us now answer actual questions and decide how many windows such and such a room ought to have, and how high from top of the ceiling and how near to the floor they should be built, and

toward what direction they ought to open so as to get the greatest light, and how much pillar between each window, and, finally, should the windows lie on both sides of a school room or only on one side, and if on one side only, should they be on the right or the left of the scholars? Other questions may arise as we go on.

Windows on the south side allow more light than those on the north, and additionally, the question of heating rooms in this respect should not be forgotten, for with the windows to the north, the colder the exposure, even for those who claim that the northern light is the best, this question of heating the room must have considerable weight. Cohn believes thoroughly in a southern exposure, for his voluminous investigations show that the same scholars tested first in a room with a southern exposure and then in a room with a northern exposure could see better in the first room. They could see more letters in the test tables, and see them at a greater distance. But as the sun often shines in very warm at a southern exposure we may on the whole urge the benefits of the eastward and a little southward, for then we get the morning sun and avoid the heat of the southern or southwestern sun. Still, on the whole. anything from east to west is permissible, provided that the windows are large enough and that, in case of direct sunlight, we can exclude the heat.

It is best not to have any light from north of the east and west line for the reason of absence of sun in that direction for the greater part of the year, and consequently of the absence of light diffused though the clouds on cloudy days which in our climate are more frequent than the clear days. If there is no other chance to light the room than from the north, then the windows must be larger proportionally. For these reasons then, first, the less opportunity of utilizing diffused light on cloudy days; second, the colder the room and the greater the heating apparatus needed; and thirdly, the greater the expanse of glass demanded, it is better from a health standpoint and the standpoint of the eyes and of economy, to light the school room from south of the east and west line if possible.

The amount of light in a school room cannot be too great says our best authority. The room should be flooded with light so that in the darkest spot any scholar can see to read the finest type on a dark day. That must be the standard. The number and the size of the windows is of the greatest importance. The smaller and the fewer the windows, the less the light is admitted In some of our old schools the windows were about 3.6 by 2.6. The best rule

is to have one square foot of glass to five square feet of floor area. Yet if there are high buildings near the windows of a school with a glass area of one foot to four feet of floor area, it will be darker than a school in the open with one glass to five of floor; so much does the position of the school, compared with the opposite buildings, have to do with sufficient or insufficient illumination. But to that I will return in a few minutes.

Furthermore, before we go too far in deciding how many windows we shall have, or how large they shall be, let us start by saying that all school windows ought to be as near as possible flush with the outside walls of the building. The shallower the embrasure in which the window is set, the greater the amount of light admitted, and conversely, any embrasure reduces proportionally to its depth the amount of light that finally enters the room.

When we say that the glass area should measure about one to four or five we exclude the sashes and window frames In many a school the windows are large enough, but the frames are so thick and there are so many pillars between the windows, and there are such masses of plaster, timber and mortar to support the walls that the light is bad.

Two window surfaces 5x10, near together, will give much more light than two windows 5x10 separated by wood work three or four feet wide. If masonry is needed to support the wall, make it taper in towards the inside of the room, and thus enlarge the space in which the light may enter. This tapering need not apply to the lower sill of the window unless the window had originally been built too high from the floor. For it should be emphasized here, that the lowest sash of the window in a school room ought not to be nearer than three feet or perhaps a little more to the floor. Build the window way to the ceiling if necessary, but do not make the lower sill any nearer than about three feet from the floor.

The best scheme that I have seen for size and arrangement of windows and masonry or plaster, in the length of a given wall, is this: first the plaster, four feet, then four windows each in the opening four feet wide, then before the four windows, three pillars of plastering each one foot wide, and at the other end of the wall plaster three feet wide. This would make a wall, including windows and all twenty-six feet Then for the side of the room we ought to have, first, three feet of plastering or wainscoting, then a window ten feet high, then to the ceiling one foot, making about fourteen feet in all. Excluding sashes we should then have the windows in glass surface about 3 feet 6 inches by 9 feet, or a

little over. The width of a room so arranged would be properly twenty-one feet, and the window surface to the floor area would be about 1 to 4½. Any school room thus constructed with windows flush to the outer walls and no buildings near, would be scientifically and satisfactorily lighted, provided that the light came any where from south of the east and west compass lines.

Perverse illumination of a school room is as bad as too little illumination. By this I mean if the windows open too near the floor or too far down from the ceiling, in such a case shadows are likely to be thrown on the work and the light fails to penetrate to the farther side of the room. It does not work well in such cases to cover the lower sash with a curtain for then the illumination as a whole is defective.

When a school house is only one story high it would be a good idea to have the whole of the left wall in each room one large window, with the exception of two or three feet of plastered surface at each end, and pillars or beams not wider than twelve inches in between each pair of windows, according to the length of the wall.

Light should always come from the left if possible, and especially is this a necessity where there is much drawing or writing. If the light comes from behind it not only throws on the work a shadow of the pupil's body and head, but it dazzles the teacher's eye so that the faces and expressions of the children are indistinct. If a school room has been arranged so that the windows are on the right hand, then the desks should be at once reversed, lest the hand of the child in drawing or writing throw a shadow on the very spot which is to be occupied with a mark from the pen or pencil. This cannot be too much insisted upon. If the light comes from in front, as it does occasionally in some school rooms, it must be either insufficient to illuminate the whole room, or else so dazzling as to do harm to the eyes of those who face it, to say nothing of preventing anyone seeing what is written on the blackboards, which are often built between the windows. I trust that none are so arranged except as a necessity. I would here remark, also, that the blackboards, even when well arranged as to light, are generally built too far down towards the floor. The result is a waste of space, because the examples cannot be seen owing to the interference of the scholars' bodies.

Although it is always best to have the light come from the left, especially when the children are writing or drawing, it will not do to have it come solely from that side or indeed from any one side,

if the room is too wide, that is, more than the 21 feet which we previously agreed to call a normal width with a glass surface about nine feet high. A room 30 to 40 feet wide cannot be properly lighted by windows from one side only, unless the windows are 16 feet or more high and extend fully to the ceiling, while the size of the wall would measure as much as 20 or 24 feet. Or a room 40 feet wide with a height of 12 feet would have to be nearly all glass on the left side, and either additionally behind and in front to be properly lighted. Where the room is too wide to be well lighted from the left side alone, we must have additional light from the right side, and in order to avoid cross lights which are "perverse" the windows on the right side must be smaller and higher up in the wall than those on the left side. They ought to be one-half the size on the right side of that on the left, and not less than six or seven feet from the floor to the lowest sash. Then a narrow blackboard could be built in under them.

A glass roof would be the ideal, for then there could be no place in the room unilluminated. But this cannot be done where snow is prevalent so many months in the year, nor can we find sufficient land in cities to indulge in such large one-storied edifices as would be needed to accommodate all. If at any time, mechanical schools are established in the state, it would be interesting experimentally to try this method of illuminating. This has already been satisfactorily done in many chemical and microscopical laboratories.

The surroundings of school houses are of the greatest importance in studying the question of the proper lighting of school rooms. No matter how strictly we follow the standards of proper height, length and width of the room and proper proportional size of the windows, the light in school rooms will be insufficient if in any way blockaded by trees or neighboring buildings. The most learned French authority demands that the distance between any school house and the nearest building ought to be at least twice the height of the school house itself. If a school house is 40 feet high, no buildings should be allowed within 80 feet of the same, unless the school has so been arranged that the rooms are not on that side which is nearer than the prescribed distance to any other building. If corridors only are on the side of a school house within 10 or 20 or 30 feet of the nearest building, no harm will result from insufficient lighting.

The deleterious effect of the propinquity of high buildings to school houses has been scientifically demonstrated by the discovery

of a greater degree of short sightedness in schools in narrow streets, and with high buildings lying adjacent inside of the prescribed limits, than in schools of the same grade where all four sides were open to the light. Therefore, I say earnestly, in putting up school houses get space enough to start with, and have assurance that this once adequate space shall never be built upon whilst the school house stands and continues to be used for educational purposes. A similar bad effect may be produced in the school house itself by arcades, the rooms built in beneath, instead of having the windows nearly flush with the walls.

If a school has once been built with too small windows, watch the effect of an old dwelling house converted into a store with large windows. If we can thus illuminate an old mansion we can surely do as much for our school rooms.

It is curious to notice in this point of view that whereas in 1875 a certain grammar school had exhibited such and such a percentage of short sight with ill-lit rooms, that percentage in 1885 had decreased one-half in the same rooms, after enlarging the windows.

Gray or blue curtains are useful in some school rooms to bar out direct sunlight. They should be so arranged as to pull both ways in pairs, and by a little ingenuity in this respect the direct light can be excluded without darkening the room at all. Ground glass in all the windows has been proposed as a substitute for curtains, but it is too dazzling for the eyes when the sun lies directly upon it. Blinds on the inside of the window are also useful, but on the whole, curtains are the best means of excluding direct sunlight.

When the building is so wide that two rooms can be built opposite one another, a wooden partition with glass in the upper halves is very useful to illuminate the back side of each room. The lower halves can be utilized for blackboards.

In conclusion, I would add one suggestion pertinent to this topic. All short sighted school children ought to be favored by being seated in good light and not too far from the blackboards. And more than that, it is my opinion, after many years of investigation of the subject, that short sighted children cannot too early be furnished with proper glasses. Parents ought to see to this and have the glasses accurately chosen. They should be fitted into eye glasses so as to be easily removed, because where simple short sight exists the glasses are to be worn only to see distant objects, and not for reading or study. But where short sight, both for far and near exists, the glasses should be chosen with extreme care and fitted into spectacle frames in order to be of the greatest benefit and of the least harm to the wearer.

Gymnastics in Schools.

BY DR. F. H. WHITTIER OF BOWDOIN COLLEGE.

Mr. President.—I understood that I was to speak especially on the subject of gymnastics in schools and for that reason the remarks I make will be on that subject. It is often said that Maine is a good State to rear men and women in, and I think the State has well earned that reputation. What do you suppose is the reason that a state like Maine, situated at the extreme northeastern portion of the United States, sparsely populated, containing altogether about one one-hundredth of the population of this country, should have so many men of whom America is proud? Why should it have such a great influence upon the politics of this country, besides furnishing governors, congressmen, judges and college presidents to her sister states. I cannot help thinking but what a great many of our Maine men and women owe their success in life to the robust strength and sound constitutions developed by the exercise afforded by their country lives among the hills of Maine. Dr. Webster has emphasized the connection between a sound mind and a sound body and it is not necessary for me to pursue the subject further. The history of individuals shows this connection, and the history of nations shows the same thing. Take for example ancient Greece, the first country to make physical exercise a part of the education of youth. As long as those exercises were popular, as long as they were kept up, Greece steadily rose in intellectual and political power and influence; but as soon as the people became rich and luxurious. and allowed those exercises to decline, then intellectual progress stopped and their political power began to wane A few centuries later Rome had the same experience. Coming down to modern times, about fifty years or more ago, Germany introduced a complete system of physical education into the public schools, and into her army, and you all know the great advance that Germany has made of late years, both in the matter of political influence and intellectual growth. The Germans themselves ascribe a great share of this advance to the influence of their system of physical education. Perhaps the greatest miracle of modern times is how a country like England, in area hardly twice the size of the State of Maine, should exercise a greater influence in the world than any other country. It would be interesting to consider how far this influence is due to the pluck, energy and

strength developed by that system of games and out of door sports for which England is noted. To those who believe, as we do, in the connection between a sound mind and a sound body, it is not cheerful to think that the boys and girls of Maine are of less vigorous physique than were their grandfathers and grandmothers fifty years ago. If you doubt that this is so, you have only to talk with the oldest inhabitant and you will be assured that there were giants in those days, and that the boys and girls now are not at all physically what they were then. Take the one thing of placing a bar or string the height of the head when erect, and then by taking a run, jumping over it. I doubt if there is a man in Maine that can do that athletic feat to-day, and yet I never talked with the oldest inhabitant but what had done that thing himself, or who had an uncle who could do it. Take the feat of lifting a barrel of whiskey by the chimes and drinking out of the bunghole. Where is the man to-day that can carry off a barrel of whiskey in that way, or in any other.

But I feel sure that Maine children now are weaker than they used to be; and I think it is due largely to two causes. First, the health of Maine people is fast changing. We are changing from an agricultural and lumbering country to a manufacturing country. Farming and lumbering, and other laborious occupations are becoming unpopular. We are changing from hand workers to brain workers. If this age of steam and electricity keeps on, the time is coming when a man's life-work will involve no severer physical exercise than pressing an electric button or dropping a nickle in the slot. [Laughter.]

Another reason for the increased weakness of our children is in the faulty methods used by parents in bringing children up. I am inclined to think they are bringing up their children too much in the same way they rear house plants. It is not well for children to be kept under a glass case, nor is it well for children to be dressed so nicely that they cannot play in the dirt. The Grecian mother wanted her son to return with his shield, or upon it. The New England mother, while she may be anxious that her boy should learn to swim, is unwilling that he should go near the water.

The situation of our girls is worse than that of the boys. At the age when Harriet Beecher Stowe, and Annie Louise Cary and Lillian Norton were tramping through the woods and fields, chasing butterflies or picking blueberries, the girls of to-day are play-

ing with dolls or poring over the books and developing spinal curvature at the piano.

I am convinced that our Maine children are in arrears in the matter of physical development; that children of a given age are not as well developed as children of that age should be. During the past few years I have been in a position to note the development of boys as they come to college—boys between the ages of sixteen and nineteen—and I am convinced that these boys are not as well developed as they would be if they had had a fair amount of exercise. My experience has been that such boys, during the first five months of their college course in the gymnasium, increase their strength on an average between thirty and fifty per cent; and I am not so conceited, I have not such faith in my mode of training, as to think that I could get any such results if their physical training before they came to college had not been neglected.

For the last few years I have been experimenting with gymnastics in the public schools of Brunswick. The results there have been most gratifying. I have been able to give but little time to the work, but I think Prof. Robinson will bear me out in the statement that what little work has been done has exerted a marked change over the personal appearance of these boys and girls. This is not the place, nor have I the time to discuss the methods to be used in physical education. There are three systems in vogue in this country: the Sargent system devised by Dr. Sargent, himself a native of Maine; and the two methods imported from Europe—the German method and the Swedish method. All these methods are good in their way. The Sargent method is no doubt the best for colleges, and it has been introduced into most of the colleges in this country. It is too expensive and takes too much time and money to be placed at once in the public schools. The German and Swedish methods afford a system of class work which can be applied to the uses of public schools with very little expense. I think the method of the future will be a wise combination of what is best in the German and Swedish systems, with some of the leading principals of the Sargent system. The Sargent system, as you probably all know, involves a careful examination of the student, and prescription of such exercise as will tend to remedy his physical defects.

The State Board of Health of the State of Maine has done much to advance the cause of physical education in this State, and I hope it will still continue to take an interest in it.

It seems strange that our Maine teachers are so far behind hand in the work. In Massachusetts, Connecticut, New York, Pennsylvania and through the West, gymnastics are being rapidly introduced into the public schools. I suppose there are twice as many children taking regular exercise in the public schools this year as there were last, and twice as many exercised last year as the year before. It has spread like wildfire everywhere, and I hope you will all exert your influence to see that the State of Maine shall be true to her State motto in this respect. [Applause.]

THE

SANITARY INSPECTOR.

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Notes, Sanitary and Otherwise.

Blanks for the annual reports of local boards have been sent out.

Secretaries of local boards should now and then consult the "Reference List" of blanks and circulars to see whether copies of all are on hand.

We hope before long to have the INSPECTOR catch up with the march of time, but, with the late pressure of work, tardiness has been inevitable.

If any person who should be, but has not been supplied with blanks as provided in the new vital statistics law, will notify "State Registrar, Augusta," it will be a favor.

The matter of vaccination was a while ago before the meeting of the Medical and Surgical Society of Berne, Switzerland. After a most interesting and effective debate, the Society, numbering many distinguished practitioners and consultants present, gave it as its conclusion that in vaccination we have the best and safest prophylactic yet known against small-pox, and that, in the view of the meeting, the principle of compulsory vaccination should, from the sanitary point of view have a place in the new law for the regulation of public health.

An epidemic of jaundice among children occurred in the kingdom of Saxony, extending into some of the neighboring German during the years of 1889 and 1890. Dr. Meinert, who made states, collective investigation, reports that no determined geographical conditions influenced the disease, that it affect principally children under fourteen years of age in well conditioned families, and concludes that the disease is infectious and that it should be separated and distinguished from ordinary jaundice as a disease *sui generis*.

Objections to Placing Hot Air Registers in Floors.

We have noticed on several occasions, a most disgusting, if not dangerous, practice arising from placing hot air registers in floors. Reference is made to using the register for the purpose of a cuspidor. If attention is paid to this, one will be surprised to note the number of persons guilty of this act.

Recently in a hotel heated by natural gas, and having a large hot air register in the floor, we saw not less than half a dozen persons discharge their saliva into it. One of these was the proprietor of the hotel, an old man suffering from chronic bronchitis with a copious muco-purulent expectoration. One can scarcely imagine anything more horrible. And if we consider that consumptives may sometimes cast their expectoration into the register, the danger of the practice becomes apparent; for a more efficient method of scattering the germs of tuberculosis through the air of an apartment could not be devised.

The floor is seldom or never the place for a hot air register. With the greatest possible care a considerable amount of dirt will collect in it, polluting the air more or less, that enters the room. In the absence of cuspidors, it always offers a tempting place for the chewers of tobacco to dispose of their spittle without b traying their filthy habit. Persons coming in from out of doors, with wet, dirty feet, will nearly always stand over the register to dry their shoes, affording another source of air pollution. Other objections present themselves, but those given should affiuce to condemn placing hot air registers in floors, and especially in public places—*Monthly Sanitary Record, Ohio.*

PROCEEDINGS OF THE SANITARY CONVENTION AT PORTLAND.

[CONTINUED.]

The Practical Working of the Present State Sanitary Law.

By GEORGE C. BURGESS, Secretary of the Local Board of Health of Portlanc.

Prior to the year 1887, the control of all matters relating to the health of towns and cities within this State, was, for the most part, in the hands of their respective municipal officers.

Elected as these officers were to manage the purely business matters of their communities, with but little thought of their connection

with health matters, it is not at all strange that very little was done regarding them, and unless the exigency was very great, it would seem that the municipal officers did not care to trouble themselves about matters pertaining wholly to the public health, in the same way as they did with regard to care of the poor, the public schools, and the public streets.

It cannot be denied that there was often a need for action, and the need and the demand became imperative, not only for some law which should enable prompt, thorough and effective action to be taken to conserve the public health, but also to collect and collate such information as would be of service in studying the causes of such diseases as are prevalent in any locality, and some method of prevention and limitation of such diseases. Out of this need and demand came the health law, as it is called, of 1887.

I do not know what may have been the state of affairs in other municipalities, but here in Portland very little was done in health matters. Now and then a complaint would be made by an indignant citizen, of some outrageous nuisance, and this would be turned over to the police already burdened with the enforcement of innumerable ordinances, and the chance was that many complaints would receive little attention and fewer still be abated.

In 1885, a Board of Health was formed, under a law passed for the purpose, consisting of two Aldermen, two Councilmen and the Mayor, President of the Common Council and City Physician, additional members ex-officio.

This Board, though rather cumbersome, did a little good work in mitigating and abating some bad nuisances, but it was often times difficult to secure the attendance of a quorum, owing to press of other business. It was the intention to make the City Marshal the Executive Officer of the Board, but when citizens found that there was a Board which actually took cognizance of complaints, they poured in upon it in such numbers that the Marshal said that if he was to attend to all complaints made to the Board, he must neglect everything else, so that in his place an Inspector was appointed, who found his time very fully occupied indeed.

Considering this almost entire neglect of health matters, and consequent ignorance and want of interest in them throughout the State, it is certainly wonderful that the first law relating exclusively to this subject should be so complete; should so well meet the conditions then in existence, and there is no doubt that this

is largely owing to the intelligence and painstaking care of the Secretary of the State Board.

I am sure that our Boards in this State started with better defined duties, and with larger powers than had been acquired and formulated in many States when health laws and Boards of Health had existed for years.

Here we had had a sort of experience for two years, and as it happened that two persons connected with the old Board became members of the new one, it was not so difficult as it might have been, to set to work the machinery of the new law.

Under the broad provisions of clause V of section 7 of the law, from time to time rules and orders have been made, approved, as required by a Justice of the Supreme Court, and put into effective use and service.

I wish, however, that that clause went at least one step further, and in that, in addition to "such orders and by-laws as they shall think necessary and proper for the preservation of life and health," some authority could have been given to mitigate or abate nuisances which do not strictly belong to that class, but do pertain to the great comfort of living. There are manifold complaints which are brought before our Board, which may not be classed with those concerning nuisances dangerous to life and health, but they are certainly strongly allied to them, and may, although not indicative of dangerous conditions, distinctly indicate conditions which may lead to danger both to health and life.

The law seems primarily to have been intended for the control of contagious and infectious diseases, and next, to control as far as is possible conditions dangerous in a general way to life and health. Incidentally, almost, power is given under certain restrictions, to make provisions for the preservation of life and health.

Fortunately, as this is a subject which interests everybody, the widest, broadest interpretation is allowed in the construction of the law, and if a conservative course has been pursued, so as to gain public confidence, public opinion will be back of all proper efforts to enforce the law in its spirit, even if the letter should be or seem to be, wanting.

The main difficulty, it seems to me, in any law of the kind, is that it is drawn so as to provide for conditions which differ so greatly as do those which obtain in city and country. With the exception of the conditions involved in those matters especially pertaining to the control of infectious and contagious diseases, and

which no doubt apply to one as well as to the other, there is hardly any resemblance between the conditions existing in cities and towns, so far as the operation of this law is concerned.

I think that fully nine-tenths of all the complaints made to our Board come from causes which belong to crowded localities.

In country towns without general water supply, with large spaces of open ground separating the houses, and where accumulative privies if not universal are yet the general rule, where unsightly and unsavory manure heaps are not infrequent, but are considered necessary and not objectionable, where cellars filled with vegetables abound, there will yet be little call for the intervention of the Board of Health to abate or abolish the nuisances which take nine-tenths of the time of the Inspector of our Board.

And just here and following this I may state what is the result of the working of the law. The feeling on the part of the property owners in the city previous to the passage of the law was not greatly different from that of property owners in the country. Very many considered the law as oppressive, and the visits of the Inspector intrusive and impertinent. Matters were not, in their opinion, suddenly so very much worse than they had been the last fifty or a hundred years.

They felt as if they had acquired certain vested rights in foul privies, stagnant drains, filthy cellars, unclean hog sties, and unwholsome rubbish heaps, and that no one had the right to ask why they existed, much less had the power to order their amendment or removal. But the practical operation of the law has shown that it is a positive benefit to property owners, and that a more satisfactory class of tenants can be secured for houses that are made more wholesome and healthsome by needed sanitary improvements. Furthermore, it was found that the comfort of living was largely increased when proper sanitary precautions were observed.

Where four years ago an order of the Board of Health was grudgingly complied with, and complied with only after a long course of persuasion, a mere hint now often suffices, and in certain quarters where formerly a deaf ear was turned to representations of the Board, advice from it is not infrequently asked for.

More than that, the education in sanitary matters amongst all classes of people has been steadily progressing, and it has been a frequent and voluntary testimony of physicians that the whole city has been improved, visibly so, even to a casual observer. That

the caring for patients has been made less onerous because of this sanitary education of the people. It has often been a matter of wonderment how people lived a few years ago!

The formal written complaints made to the Board amount each year to some hundreds. The visits of our Inspector reach into the thousands. Our aim is to give prompt attention to every complaint (though I confess we do it unwillingly where the complaint is anonymous.) Many are urgent, some are peremptory. None seem to be able to wait until the next day. What then did they do when there was no Board to listen to them.

We have always attempted to make haste slowly, to take no step that we should be obliged to retrace, to gain and keep confidence rather than compel unwilling obedience.

I do not think that we make any claim to have accomplished all that we would like to have accomplished, but we believe that we have made some improvements and some progress, and hope to make much more.

Whether from the efforts of the Board any practical gain has come to our citizens, whether the death rate is really less, and the average health of the city is better for its labors, is a question which we leave for some statistician to examine and answer.

It should be more clearly understood than it now seems to be, that in certain directions the power of the Board of Health is quite limited.

Locally, that is in this city, the cry periodically comes up about us, "Why does not the Board of Health abate the nuisance of the Back Bay?" Not reflecting that we have no power to construct sewers, nor to make contracts to fill large areas of flats with gravel. Nor do we have power to compel plans of house drainage to be submitted to the Board for approval before they shall be carried out in construction. Nor can we interfere in cases of powerful and obnoxious oders from fertilizers and processes of manufacture, unless they are distinctly dangerous to life and health.

An assertion that a thing is dangerous to life and health does not make it so, but it would be a dangerous thing to proceed under such an assumption. I do not know just how far the power conferred by paragraph V of section 7 of the law, would sustain us in making by-laws or orders which wonld interfere with an established business. I wish that the law were more definite here, but

for my part, however, I should prefer additional legislation, before attempting to control any manufacturer's process by an order of the Board.

Additional legislation we no doubt need, and there is as little doubt that we shall have it when the education already done shall have proceeded so far that the people themselves shall call for the additional protection which such action would give.

Dr. W. L. Hawkes of York said.—Mr. Chairman, I am happy to say to the gentlemen of the convention that thus far we have been extremely fortunate in having not very difficult problems to solve. The main difficulty has been in the matter of drainage. We have had the valuable services of our president in straightening out our little difficulty and helping us lay a system of sewerage into the sea. But as far as dealing with epidemics, if the good Lord is kind in that direction, we have been highly favored. As a practicing physician among the summer visitors, I have always had grave doubts as to how far I could go in this matter of dealing with hotels and with people of means, whom I find are very sensitive about having their liberty curtailed. I had a case of diphtheria in a hotel. I took the patient in my arms to the carriage, carried it to a private house, and made the people pay the bills. In dealing with these cases we are hampered somewhat by the fact that our town authorities are very niggardly as to bills presented by the Board of Health. I hope by distributing the circulars furnished by the State Board of Health, we may educate our citizens upon this point and may create some kind of a spirit of precaution and thus be able to do something more in that direction. We called upon the town to assign us some portion of the town's property on which to erect a house that might be used for cases of zymotic diseases, but they refused to do so But I am a firm believer in public education. In view of what has been done in the few years that we have been at work, I think we may reasonably expect that at the next session of the legislature we shall be able to come before the people in a manner which will not only command their respect, but make them listen to us and be willing to appropriate a larger sum and be more liberal in their distribution of the public funds.

I have been very much pleased with the remarks of the different speakers. I hope this is only the beginning of other assemblies of

this kind. I assure you that, although in a far off corner of the State, I shall try to spread the good news of this meeting through the public press I trust the time will soon come when the people who live at summer resorts as well as other citizens, will learn that precaution in avoiding these diseases will be a financial benefit to them as well as a matter of enjoyment of good health.

Capt. Richard Harding of Yarmouth.—Mr. President, we have heard good news and good reports from the Sanitary Board of Portland and other cities, and now I suppose the Convention will want to hear from the rural districts. I am from one of the Boards located but a short distance from here. in the town of Yarmouth.

I want to say a few words about the good work that has been done in our town. When the thing was first started I was appointed upon the Board. The first time I was on for one year, and when my term ran out, I was put on again for three years. My associates are a doctor and a mechanic I have had about all the work to do. The doctor doesn't want to take any part in hunting up nuisances because it makes enemies and interferes with his business; the mechanic had rather hunt after jobs, and as I had no particular business, being an old retired ship-master on no pay, nothing to do but to eat up my substance, of course the whole work fell upon me. I ask no favors and expect none, and I want no town office. I have been secretary ever since the first year. Whenever there was a complaint it came to me, and I made a point to attend to it at once. We have had several cases of contagious disease, some diphtheria, and a little scarlet fever. When it was necessary to isolate a house or to put a card on it, I have found no difficulty and have never heard any objection to it. Of course when you shut a house up, it is necessary to look out and provide for the wants of the inmates as they cannot get out and the grocers will not go there. I have taken them in charge, have gone to the house every day, taken the orders, and sent to the grocers and got them, and whenever I have made any bills and rendered them to the town, they have been paid without objection. The people were willing to pay because they saw the good work going on, and they believed in it and saw the benefit of it.

At first the nuisances were hard matters to deal with. There would be a complaint and I would go to see the person. He would say "What do you come here for, why don't you go to my

neighbor, his place is ten times worse than mine." I said never mind about him, we will tend to your case first.

President Jordan.—We rather hoped to hear from different towns some suggestion of methods of financial aid to the different Local Boards, either through a change in the State law or the adoption of town laws. As a party worker that originated this State law, we would like to hear from Dr. Gerrish, and find out what suggestion he has for any modification of the law in that direction.

Dr. Gerrish.—As I was unexpectedly, and, as it seems to me, unfortunately detained this afternoon, I did not hear the paper of Mr. Burgess, and therefore do not feel competent to discuss it. I have not thought at all about the particular point which the president mentioned—the method for providing aid for carrying out the sanitary necessities of different towns. But it seems to me that probably the way to get at that would be to excite an interest in sanitary matters in the way of educating the people, so that they would willingly stand a sufficient tax for carrying out whatever recommendations the Local Board might make. With reference to future legislation, a subject which comes in properly with all this matter of the working of the State laws is a subject that interests me and to which I have given the most thought. We should have some law relating to the plumbing of houses, and some law which would make provision for insuri g the purity of our water supplies to the towns and cities. A good many of our towns are at present getting general water supplies With reference to our own supply from Segabo Pond, I have long felt an anxiety lest in carrying out of sanitary arrangements in the towns bordering on the pond, the discharge of sewage through the brooks which feed it would contaminate the entire body of water. It has seemed to me that some general legislation is d sirable in order that that body and other bodies of water in the State, from which the supply of towns and cities is derived, should be kept pure. We ought not to wait until there is a contamination of the supply, but look out thus early before there is any case of contamination, and have some general law that can be enforced. I think that is one of the most essential things to be done in the way of future legislation. The plumbing law, I understand, has been treated of by Mr. Burgess. and I do not feel it safe to go into extended remarks upon any point because I do not know but that the whole subject has been com-

pletely covered. I am glad to see so many from out of town. The gentleman that preceded me expressed regret that so few are present. Twenty from out of town, not connected with the State Board of Health is as many as I expected to see. This is the little end of the wedge and it must be thin. Another Sanitary Convention will bring more, and in the course of five or six years—I do not expect a representative from every one of the four hundred municipalities—but I shouldn't wonder if we had representatives from a hundred and fifty. I trust a sanitary conference will be held at least once a year.

Dr. Smith.—One topic has been suggested for consideration which is really an important one, and that is for those interested in sanitary work to devise some method by which legislation can be secured to provide for the proper carrying out of sanitary work in towns. We have a law which makes it obligatory for towns to appoint, before a certain date, a Local Board of Health, and that Local Board of Health is expected to do its duty under the law.

Now, no provision is made for compelling the municipality, which gave birth to that Local Board of Health, to provide the means for maintaining it. It is within my knowledge that in a number of localities in this State, the sanitary work which the State Board of Health would be glad to see done, the work which is demanded of the Local Board by the State sanitary law, has failed because the towns were too mean to pay bills to the amount of $50. Here is a populous town within less than a mile of the city of Portland that has aspired to become a part of the city, which found fault because its Board of Health asked for $50 to carry on its sanitary work. A year ago last August I went to a town in the eastern part of the State where an epidemic of diphtheria was in progress, and where a great many children were sick and a great many had died. I made some inquiry as to what provision was made for carrying on the work of the Board, and I was told none, that whatever expense incurred was incurred on the individual responsibility of the members of the Board; that some of their bills had been objected to, and some disallowed; that the Board of Selectmen had, after strenuous exertions on the part of the Board of Health, appointed an Inspector at $2 a day; that the action of the Board of Selectmen was protested against by a large majority of the citizens of that place, and so, after keeping him at work for two or three weeks they discharged him. Furthermore, the relations between the municipal officers of that town and the Board of Health were such that the Selectmen, without any consultation with the Board of Health, appointed this man as agent

of the Board to go about and placard the houses and then required him to report to the Selectmen and not to the Board of Health. I was assured of this by all three members of the Board, and that statement was confirmed by the Chairman of the Board of Selectmen who told me that, for a fortnight at a time, the Board of Health hadn't the faintest idea of what the man was doing, or where he was. Now that is a state of affairs that should not be allowed to exist If we have a sanitary law it is worth enforcing. I feel very strongly on this subject, and it is a question which all of us who are engaged in this sanitary work ought to bear in mind, that something must be done in the way of legislation to make some provision for the support of the Locol Boards of Health.

Mr. Burgess —Dr. Young stated to me a little more than two years ago, before the meeting of the legislature which preceded the last, that he had in contemplation at that time to recommend an addition to the law to this effect; that municipalities should be obliged to raise a sum of money for the exclusive use of the Local Boards of Health not less than five cents for each inhabitant, that being the experience in other States of about the amount of money that Local Boards of Health could judiciously expend; and also that this appropriation shou'd be for their exclusive use and control, and should not be merged in the general appropriation. The reason for that can be seen by those who have had occasion to know about these matters, because sometimes the emergency is so great that it must be available immediately, and the Local Board might hesitate if the expense which it necessarily incurred was to be paid out of their own pockets, or presented to the town with the probability or possibility that they might be disallowed.

Dr. Webster of Augusta.—Mr. Burgess has said in part what I was about to say. The State Board has acted very cautiously in asking for new legislation. The matter that Mr. Burgess speaks of was talked over by the Board, but it did not seem that the time had come when we could venture to ask for legislation of that kind; besides we had some additional legislation to ask for from that legislature which we then deemed of more importance. At the last legislature we considered the most important thing to ask for was the law for the registration of vital statistics, and it was thought best not to ask for anything else. That is the reason why we have never yet asked the legislature to pass a law of the kind Mr Burgess speaks of. I hope the time will soon come when such a law can be passed It seems to be a thing essentially necessary now.

Local Boards of Health and Their Relation to Public Nuisances.

By R. J. MARTIN, M. D. Health Officer of Augusta.

(An Abstract of the Paper.)

This subject will aptly illustrate the necessity of popular education on sanitary matters and the progress already made in this

direction. People must be taught to realize that disease, far from being due to occult forms, and intelligible only to the learned, is produced by causes largely in their own control. Accumulated filth and putrifying vegetable and animal matters contaminating the air with noxious gases furnish conditions for the origin and extension of disease.

A public nuisance, in a sanitary sense. need not be one that effects a whole community or even a part of one. Nor can unhealthy premises which affect only the persons thereon be considered such. But if offensive or dangerous to one or more persons outside, it comes safely within the province of the health board to remove.

The abatement of public nuisances is governmental duty and comes under the common law. Special enactments have, however, been made during the last few years in most of the states. The Maine laws on this subject are esp cially good.

It has often to be borne in mind that what may be a nuisance to one, to others is the means of earning bread

Sulphite pulp mills and many other manufacturing establishments furnish examples of this. But public opinion will never allow commercial interests to suffer.

The small number of public sewers in many of our cities is a great obstacle to the abatement of many nuisances. A sink waste exists whose contents are not directly exposed to the purifying influences of sun and air. The locality is crowded. A cesspool may be impossible or dangerous. How can a board correct such a condition? Public sentiment or perhaps State laws should enforce all cities to a proper system of sewerage. "Pure water. pure air, pure soil" demand this.

Members of a board of health, without pay, depend largely on complaints from the people, in locating nuisances. These, too often, are instigated by petty malice—not by high ideas of public or private good, while many a neighbor will suffer a pernicious nuisance without complaint. Hence the value of an intelligent inspector, impartially making a house to house inspection, showing sanitary deficiencies, suggesting the removal of existing nuisances, interesting and educating the people. Ignorance of the good desired is still shown by the meager appropriations of some of the city governments, and by the coldness and opposition of many people in my endeavors to abolish nuisances. Were sanitary education perfected, nuisances would be as rare as they are now common. With the hundred eyes of Argus and the persistency of the "old man of the sea," local boards of health could not eradicate all the multiple nuisances existing without public co-operation and sympathy. Hygiene should be taught in every advance school. Each year since the organization of our State and local boards of Health shows an increasing sanitary education and interest among the people. This spreading knowledge will make all soon realize that the present expense and labor of removing nuisances will be amply repaid by future health and comfort.

THE

SANITARY INSPECTOR.

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Notes, Sanitary and Otherwise.

The last case of small-pox in Canada has gone. The Provincial Board deserves a "Well done!"

News came from Berlin some time ago that Dr. Pfeiffer, son-in-law of Dr. Koch, had discovered the bacillus of influenza, and the later news appears to be raising hopes that his work may aid in diminishing the prevalence or mitigating the severity of the attacks of influenza in the future.

Viewing the question in the light of the observations of the past two years, there is much signifying that influenza is an infectious disease, and many physicians now regard it as such. Looking at it in this light, isolation for the purpose of preventing its introduction or extension has been tried in some quarters with the report of good results, and, again, some physicians believe that the nasal inhalation of a few drops of carbolic acid on a handkerchief once or twice a day, or the application of an ointment or solution of boric acid to the nostrils has been a prophylactic. Meanwhile until the doctors settle these questions it will be the better part of prudence not needlessly to associate the feeble and the aged with those who have, or have just had, "la grippe."

The French name of the prevailing epidemic has taken as firm a grip on the people as the disease itself has. Enquiries come in as to the difference between la grippe (the grip) and influenza. There is none, only the present tendency of the public to swap names.

Typhus fever has been imported, not only into New York city, but immigrants by the same steamer that have come to Connecticut, Rhode Island and Massachusetts, have come down with this disease.

With the present lively immigration from Russia, it will be strange if other importations of this undesirable disease do not follow. Portland is well aware of the danger and the local board is prepared for immediate action if the infection comes.

Scarlet fever is showing a troublesome tendency to spread in some parts of the State. The general welfare requires its extension to be stopped at once, and we hope every local board of health will fully appreciate this fact, and will insist on prompt notifications, and care on the part of everybody against scattering the infection. With an intelligent understanding of their duties, there is but a small percentage of our people who will not willingly do what is right. Therefore arrange at once to put circulars No. 45 and No. 50 into the hands of every family.

Some local boards say that they do not receive reports of infectious diseases from physicians. This is simply a confession of their own inefficiency. The law is very explicit as regards this duty of the physician, and if he ignores it, the provisions for enforcing the law are simple and of but little trouble to the local board. We are sorry to have to say that the penalty section of the law is needed by a few doctors, but we are glad to *know* that most of them are perfectly willing to do what is right. As a whole they are as willing, and perhaps more so, than any other class of men, to work for the public good. If you do not believe it, ask them to do this one thing for the public safety. If they refuse or willfully neglect, do simply what the law says it shall be your duty to do (Chap. 227, Sect. 2, Laws of 1889.)

The State Board can supply local boards or private citizens with the scarlet fever circular in French for distribution where that language is understood more easily than English. It constitutes form 60.

It is altogether a mistaken notion that children must necessarily have scarlet fever. If they are kept from the infection until they reach the age of ten or twelve years their susceptibility to the disease rapidly diminishes and they reach adult age with a greatly diminished probability of ever taking it.

A single child, sent to school before complete recovery from scarlet fever in one or the *arrondissements* of Paris, was clearly shown to have been the direct cause of a hundred and fifty other cases of that disease with eighteen deaths. A fearful responsibility rests on the man or woman who will thoughtlessly or willfully let his child be the medium through which other children are slain.

In the Presidential address in the section on Preventive Medicine, Sir Joseph Fayrer reminded us that in 1859, the death rate among the English troops stationed in India was 69 per 1000. The inquiry which developed this fact resulted in certain changes and improvements in the housing, clothing, food, and occupation of the soldiers. Since these have been carried out there has been a steady decline in the death rate, and the annual reports of the sanitary commissioners to the Government of India give the rates as: in 1886, 15.18 per 1000; 1887, 14.20 per 1000; 1888, 14.84 per 1000. During some years it has been a little lower, down to 10 per 1000, while the general efficiency of the troops has increased. It is not easy to estimate the money equivalent of this, but if we take the rough standard which values each soldier at 100 pounds, a simple calculation will show how great is the gain, and who can estimate the value of the lives saved and suffering avoided? As to the native soldiers with whom the European troops may be compared, I find that the death rate was: in 1886, 13.27 per 1000; 1887, 11.68 per 1000; 1888, 12.84 per 1000.

Prof. Stokvis of Amsterdam said that, since the Dutch in India had followed the example of England, cholera and dysentery had been diminishing in a most remarkable manner. While the percentage of mortality amongst the Dutch soldiers in India from 1874 to 1878 was 15, there had, in consequence of the introduction in the interval of artesian wells and a better supply of water been a decrease in the period from 1879 to 1883 to the rate of 6.4, and from 1884 to 1890 it was 3 per 1000.

A Good Word for Portland.

The outlook for 1892 is a very encouraging one in many important directions. The correspondence with officials charged with the inspection of persons coming into this country from abroad as

respects their sanitary condition, which we publish in this issue, marks another step forward in the maritime methods. But the most important of all is the action taken by the local Board of Health of Portland, Maine, and the co-operation of the State Board. It will be remembered that we have already called attention to the danger from infected persons landing in Portland from the Allan and Dominion steamships which make their entry at that port during the winter months. An inspection by the Immigration Bureau of the Treasury Department has, on request, been ordered, which is satisfactory, but cannot be of the real sanitary character of one made by the Local and State Boards of Health.

The Portland health officer inspects the *whole ship's company* before landing, so that the first class passenger is subjected to the same sensible and necessary examination as the poor immigrant in the steerage. All honor to the Boards who instead of *discussing the policy* of a needful regulation, have in a quiet, common-sense way *enforced* it. May New York and Boston "follow suit," and the sooner the better. There is real satisfaction and comfort in the example and action of the Maine Boards. They are doing their duty while accepting thankfully the national co-operation through the Immigration Bureau.—*Pub. Health in Minnesota.*

Hygiene in the German Army.

Dr. von Coler, Director General of the Medical Department of the Prussian Army, speaking for Germany at the opening meeting, said:

"We must thank, above all, hygiene and her teachings that it has been possible to considerably lessen from year to year the number of patients in the army, and to reduce the number of deaths to a minimum. Indeed, I can affirm that in the years 1888 and 1889 alone, 79,500 men less applied for surgical or medical treatment than we could expect when judging from the average of the ten preceding years. Consequently many hundred thousands of days of sickness, which formerly had to be passed under medical treatments have now been won for better physical and intellectual education of the men. The death rate has sunk by two-thirds in the same time (from 6.9 in 1868 to 2.3 in 1888-89) and during the last year we counted at least 1,500 death, less than in 1868, comparing these figures with the numerical strength of the army of the present day and of that year. What an

amount of national well-being and human happiness we trace in summing up these events! Every single man, when he attained that age to serve in the army, represents a pretty fair-sized capital, which to secure in the national interest has been the successful task of hygiene. And incalculable are the beneficial consequences which lie in the fact that in every year ten thousand more of our men now remain healthy and free from germs of disease—men who, after completion of their military services, return home, settle down peacefully, and offer in their robust state of health the best guarantees of becoming fathers of a healthy rising family. Verily, considered in this light, the costs for hygienic arrangements are, through the fruits they bear, more than a hundredfold repaid, a fact to which, some years ago, an illustrious savant of this country especially alluded in a letter to the August Empress and Queen Frederick, who had early devoted her deep interest and gave her highest patronage to hygiene."

Diphtheria in the Hygienic Congress.

In the course of the papers and discussions on diphtheria, Dr. Seaton of London, asserted his belief that, contrary to the doctrine almost universally taught, there are but slender grounds for supposing that diphtheria is influenced favorably or unfavorably by what are generally termed sanitary conditions. He gave instances from his own experience in support of this assertion. The same point has been referred to by physicians of old who had had special opportunities of observation, and latterly it has been dwelt on by Dr. Thorne Thorne, F. R. S.

Dr E. Schrevens of Tournai read a paper in which he stated that the result of observations in Belgium was that, where typhoid fever committed the greatest ravages, the same fact was observable in the case of diphtheria; and that where diphtheria procured its smallest number of victims, the number of deaths caused by typhoid fever diminished equally. This agreement rested on the fact that these two diseases must be considered as faecal diseases, and their bacilli developed, prospered, and extended wherever filth and rubbish of all kinds were stored up or spread out.

Dr. Hewitt, secretary of the State Board of Health of Minnesota, had been able to establish pretty definitely the following facts regarding the behavior of the diphtheria infection in his state:

1. That diphtheria is one of the most infectious and obstinate of its class of diseases; that it is communicable by persons and

things, most often by the latter. 2. That its infection grows outside the body and below its temperature, that it adheres obstinately to clothing, bedding, and the interior of buildings, that it is preserved easily and for a long time in clothing and the like stowed in trunks and closets. 3. That isolation and disinfection in association have served a very useful purpose in the control of the disease, the best we now have, and that with their increasing completeness the disease distribution is assuming a family character limited to one or two or three associated families, except where an infected person or infected clothing has escaped control. 4. That what is now needed is careful study of each outbreak in all its relations for more knowledge, not neglecting the sanitary measures found most efficient, as indicated, till better are found."

The conclusions that Dr. Adams of England had arrived at were that the organism of diphtheria is capable of inhabitating polluted surface soil.

Dr. Gilbert contributed a paper on Diphtheria in Havre. Diphtheria, he stated, appeared in Havre about 1860, and was limited to the Graville quarter. In 1864 there was an epidemic of diphtheria close to Ingouville. From this date the number of deaths constantly increased, and the disease, which at first was confined to only a few localities, spread throughout the town. The severity of the disease increased until 1885, when a *brigade de salubrite* was formed as an annex to the Bureau d'Hygiene. The dwellings occupied by diphtheritic patients having been regularly disinfected, the mortality curve had since decreased to such an extent as to justify the hope of its total extinction, provided all the medical men of the town furnished accurate information to the Bureau d'Hygiene.

The tendency of the discussion which followed was that the best measure for the prevention of the spread of diphtheria was that of local disinfection. This point was emphasized by Prof. D'Espine and Dr. Escherrich. Most of the speakers did not consider that drainage had much connection with outbreaks of diphtheria, and Dr. Tripe stated that, in large schools, diphtheria was more often carried by contact within the play-ground than in the school-room.

PROCEEDINGS OF THE SANITARY CONVENTION AT PORTLAND.

CONTINUED.

Food Adulteration.

By PROF. F. C. ROBINSON, Member of the State Board.

Certainly no sanitary convention would be complete without something being said on the topic assigned to me. Food adulteration

has been for years one of the staple topics of sanitarians and health officers. And not only have sanitarians discussed it, but articles more or less sensational are constantly appearing in the newspapers about it. I say more or less sensational, for they are always sensational to some degree. In consequence the average reader must come to one of two conclusions, either that about half the food he buys is not what it pretends to be, or that the newspaper reports are untrue. He must, in short, lose faith in his newspaper or his food. Perhaps, however, he simply divides the responsibility and goes on reading the one and eating the other with little faith in the genuineness of either.

Now the reason for bringing up the matter at this time is not simply because the subject is an attractive one, or because I have any new matter to present upon it for the consideration of Maine health officers. For, as you probably know, the Maine State Board of Health is not specially authorized to investigate the matter, and if they were, is not backed up by any laws of the State in prosecuting offenders. It is true that our statutes contain certain laws in reference to certain adulterations, but they are generally so carefully worded that conviction under them is practically impossible. The only one of them which is at all stringent is the one in reference to the adulteration of liquors sold by the State agent. In fact the people of Maine do not seem to care much what they eat but are very particular about what they drink.

I have, it is true, as a chemist, done some work in the examination of food stuffs, but have no intention of talking especially of that, for it has not been extensive enough to warrant any general conclusions being based upon it.

But, as I understand it, this is primarily a conference meeting. We come here to get acquainted with each other, and, so to speak, "spy out the land." I propose to do simply that with this matter of adulteration; and, if after "spying it out" with me, we conclude that it is a suitable field for Maine sanitarians to occupy, I trust that we may march in upon it, with as bold a front as did Joshua upon Jericho. And perhaps, as in his case, a considerable systematic noise may be all that is needed to accomplish the result

It is fortunate, that, in getting at a general statement of the matter, no extensive personal chemical work is needed. For not only have sufficient investigations for our purpose been made by chemists of neighboring states, where the laws are strict, notably New

York and Massachusetts, but we have the publications of the United States Department of Agriculture, which has made extensive investigations during the last few years, and is still carrying them on. It will thus be understood that all statements I may make are based upon reliable work either done by myself or by far abler chemists.

In the first place the word adulteration, we should remember, means simply to falsify. It doesn't necessarily mean to poison. And yet that is the common use of it applied to foods. Say once that a given food is adulterated, and we discard it as though our lives were in danger even from its touch. But most food adulterations are perfectly harmless. Indeed they would doubtless always be so if the adulterator had his way. For primarily adulterated goods are meant for sale and use. It would defeat the chief object if they were poisonous, at least if at all rapidly so. The chief crime of such goods is that they get money under false pretenses; not that they destroy life. It is a sly way of giving short weight. The scales tip all right but not entirely by means of the proper article. Where, too, an adulterant is a distinct poison, it is only present in small amounts so that a proper meal from the given food would contain far less than a fatal dose. Those putting in such things make the general mistake of thinking that only a fatal dose of poison is injurious, while the fact is that most poisonous substances are cumulative, and the continued action of small doses is like that of a large one.

With these general statements let us glance rapidly at the different kinds of food and try to get briefly at their condition as to adulteration.

In the first place, there is no need of my telling you that the staple articles of diet in Maine, or, indeed, in the United States, are pure. The wheat, oats, corn, and potatoes come largely from our own fields; and if they get other preparation than that given on our own premises, it is in some neighboring mill where there are no opportunities or reasons for adulteration. It is true, perhaps, that our wheat comes to us largely ground, but its cheapness is of itself a guarantee against falsification, and all authorities agree that adulterated flour is practically unknown in America. It follows from this that, even in our large cities where bakers' bread is so largely eaten, very little of it is adulterated. A few cases have been found in New York and Boston where alum has been added to the flour in order to harden the gluten which may have been damaged by

"heating," but such cases are exceedingly rare. In England and on the continent of Europe such adulteration is far more common, though not now so common as formerly, owing to stricter government supervision.

And here I may perhaps be allowed to contradict a popular impression, that the United States is the chief home of adulteration of food. From the time when the ingenious Connecticut Yankee falsified the fragrant nutmeg, the idea has somehow grown that a large class of our population spend their time devising ways of cheating their neighbors by imitating articles of food, until now they have reached a perfection in such things never dreamed of by citizens of other nations. Such ideas are exactly contrary to the facts. England, whose goods so many Americans look upon as synonomous with perfection, was the original home of adulteration of food, and even to-day it is carried on there to a far greater extent than with us. As far back as the middle ages most stringent laws were made there punishing in the severest manner those who gave short weight or added cheaper or unwholesome things to standard articles of food. It was no uncommon thing in those days to see a baker led through the streets of London with his adulterated bread hung about his neck and finally fastened for hours in the stocks. And not a generation ago the little pile of alum powder was as universal on the bread board of a baker as his salt.

The reason for the addition of the alum was said to be to harden the gluten. Perhaps a word further on that point may be interesting. You are probably all aware of the fact that flour is mainly a starch, and this is true whether it be made from wheat, as it commonly is, or from other grain. But in addition to the starch there is, in all grain, a certain amount of a nitrogenous substance called gluten, a small percentage of mineral salts chiefly phosphates, and traces of other things. The gluten is the sticky, stringy mass, which remains if you wet a quantity of flour and squeeze it out through cloth. The starch is thus removed suspended in the water. Chemically the gluten is a very unstable compound, very easy to decompose. When flour is damaged by heating, the gluten is the substance first damaged, and in process of decay, it first loses its sticky character, then begins to decay, giving a bad odor. Now a loaf of bread owes its lightness to the gluten. The gas from the yeast or baking powder forms little cavities all through the dough. These consist chiefly of starch grains stuck together by gluten.

When placed in the oven the heat quickly hardens the gluten and the lightness of the loaf results. Of course, if the gluten has lost its stickyness, it refuses to hold the starch grains together and no light bread can be made from such flour. Now it was long ago discovered that alum by its astringent property would cause damaged gluten to become sticky again, and hence light bread could be made by its use from damaged flour.

When we remember, too, that whole wheat flour, which is so largely used abroad, is far more easily damaged than our white flour, owing to the fact that it contains a fermenting material which acts very easily on the gluten to soften it, we see why the use of alum became so extended in foreign countries.

It may not seem worth while to dwell so long on a kind of adulteration which admittedly is little practiced here. I do this because although alum, as I said, is rarely found in our flour, still there has in recent years grown up a use of it in bread making, especially among the poorer classes, which is attracting a good deal of attention from sanitarians. I refer to its use in baking powder. America is the great home of baking powders One begins to realize this when he gets on the other side of the Atlantic and experiences the blessed relief from their advertisements and charges of fraud upon each other. I sometimes think that the noise they make in warfare against each other is for the purpose of distracting people's attention from the undoubted fact that, as a whole, they are powers of evil, rather than of good. The great question for the American people to consider is, not which is the purer chemical, but whether they want any chemicals at all in their bread. The enormous amount of such things used is seen when we learn that their sales amount to millions of pounds every year. As near as could be estimated from returns made to the United States Department of Agriculture in 1889, from 50.000.000 to 75,000,000 pounds of different brands of baking powder were used in the United States that year, which is more than a pound for every man woman and child in the country. Now, many of these powders contain alum, and through them, it gets into bread. This of course assumes that alum is a dangerous substance to have in bread, which may be disputed. I do not propose to enter deeply into that discussion. I think, however, that I can safely say that no physician would regard it safe for a man to take regularly a dose of alum, and I for one believe that its use should be prohibited in baking powders.

But probably not over one-third of all baking powders used contain alum. What about the remainder? Are they pure? That depends upon what a pure baking powder is. There is no standard of purity as far as I know. Their object is to generate gas to raise the bread, and anything which will do this may be a pure powder in one sense. They usually consist of soda and some acid material which will unite with this and give off gas. A choice of acids may be taken, cream of tartar, or acid phosphate of lime, or alum may be used. Alum being cheaper than the others there is a strong temptation to use it, mixed, however, with one of the others, for its use pure would be likely to cause the bread to taste of it. It may also be interesting to note that cream of tartar is made from the deposits which form in the interior of wine casks, during fermentation, that acid phosphate of lime is made from old bones by treating them with sulphuric acid (in fact it is purified superphosphate of lime used so largely in fertilizers), and that alum is made from clay, sulphuric acid and potash.

But evidently after the bread is baked, the powders are not present in their original condition. They have acted upon each other chemically and formed new compounds. It is claimed by makers of cream of tartar and phosphate powders that these new compounds are not only absorbed by the system but that they are beneficial, especially in case of white flour, replacing the mineral matter which has been largely removed from the grain in its manufacture. On the principle, perhaps, that one cannot have too much of a good thing this may be true, for the amount of mineral matter they supply is many times that originally present in the wheat. And certainly no one can claim that the alum salts are wholesome.

But how about ammonia, some one may ask. In the advertisements a great deal is made of its presence or absence. The fact is carbonate of ammonia is sometimes used in place of carbonate of soda, and chemically there can be little objection to its use in moderate amount. Indeed, if bread could always be baked hard enough to drive out the ammonia from it by heat, carbonate of ammonia would be of itself an ideal baking powder, for it is wholly volatile at boiling temperature and would leave nothing in the bread. It would, however, only develop its gas after being heated, and bread raised after it is placed in the oven is apt to be filled with too large cavities as any housekeeper knows.

I think I have thus fairly stated the baking powder condition as to adulteration Briefly, much of it is pure enough soda and cream of tartar or acid phosphate. A good deal of it contains alum wh ch is dangerous to health, besides some starch or flour and, in some cases, gypsum, which are thus sold for many times more than they are worth.

The best plan, in my judgment, if something of the kind must be used, is to buy the pure soda and cream of tartar in bulk and mix them when wanted. But, best of all, use yeast bread or some other kind which contains no chemicals, aerated bread, for instance.

Perhaps next to flour, a word should be said about sugar and molasses. As to sugar, all my experience goes to show (and others agree with me) that it is scarcely ever, if ever, adulterated. I have again and again got samples of the local dealers for analysis, and always found them pure. As is well known, a great deal of quartz and feldspar are mined in the neighboring town of Topsham, the latter mineral being ground to a fine white powder before shipping to the potteries in New Jersey. I was once told by a resident in that region that the reported use of it in the potteries was merely a blind, for it was really used to adulterate sugar and candy. It may have been once true that grocers sanded their sugar but I have never found a sample so treated. Perhaps, in old times, when more brown sugar was used, which is more nearly the color of sand, it was easier to do this without detection. Molasses, too, is quite generally free from adulteration, especially the cheaper grades. The only adulterant, which can well be used for such purpose, is glucose syrup made from starch, but this is of itself too expensive to use in the cheaper molasses. A few years ago it was used very extensively in the higher grades of molasses and syrup, and is still so used to quite an extent. Glucose syrup is a thick, sweet liquid, and generally believed by chemists to be perfectly wholesome if well made. The main fraud in its use is a financial one, that is, selling a substance for what it is not. In this State there is a fine for selling such syrup but in the law the word knowingly is conveniently found, and of course it is difficult to prove, in a given case, that the dealer knows the composition of the goods.

This same glucose in its solid form, known as grape sugar, is very largely used in candy also. And here I might say a word about the colors of candies which are thought by some to be so injurious. I never have found anything, even in the most brightly colored samples to lead me to believe that anything but the harmless vegetable colors were used for such purpose.

[TO BE CONCLUDED.]

THE

SANITARY INSPECTOR.

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Notes, Sanitary and Otherwise.

Sensible parents will not wish children of eight or twelve to be kept from bed until near midnight with evening parties or anything else. Children of this age should sleep at least nine hours, and ten hours is still better.

New York capitalists propose to erect an office building twenty-six stories high. It is to be of steel construction faced on the outside with stone and terra cotta for effect merely.

Since the Russian Government has taken measures to make the decimal system of weights and measures the only legal standard, Great Britain and the United States will be the only civilized nations left using the ancient systems.

A late number of an English medical journal describes the case of a boy of fourteen who died of consumption and who apparently caused the infection of a dog and a rabbit. During his sickness both of these animals were frequently in his room and his bed.

A new vaccination law went into effect in Italy with the beginning of this year, which requires that every child shall be vaccinated before it is six months old, and again at eight, or at any time whenever the sanitary authority deems it necessary to promote individual or public safety. Those who are not vaccinated and revaccinated according to the requirements of the law, are excluded from schools, factories, workshops, benevolent institutions, etc. Provision is also made for the cultivation and supply of both animal and human lymph.

While sanitation is doing much in India, under British rule, to lessen the danger of cholera outbreaks at the fairs and sacred fes-

tivals, Mecca, the shrine toward which the Moslem fondly turns, still remains a plague spot to her devotees, and a source of cholera infection to the world. It appears from statistics lately given in the *Lancet*, that of 64,638 pilgrims who, during the last six years, have embarked for Mecca on the pilgrim steamers from Bombay, 22,449 have never returned.

Clearly the communicating of other diseases with the vaccinia is far less frequent than fatal poisoning by mistakes in dispensing medicine; less frequent than deaths due to erroneous treatment, consequent on mistaken diagnosis by physicians. And it would be even less unreasonable to wholly renounce the practice of medicine because of the accidents to which it is liable and the quacks that infest it, than it would be to renounce vaccination by reason of the accidents to which it is liable, chiefly on account of incompetents. —Dr. Bell in *The Sanitarian*.

Contagiousness of Tuberculosis.

Remarkable and striking evidence of the contagiousness of tuberculosis is recorded anew by M. Arthaud, who gave some noteworthy statistics and personal observations on this subject at the recent Congress on Tuberculosis. Of thirty-five workmen forming the major part of the personnel of the municipal electric works, he found thirty-two the subjects of tuberculosis. Four of these are known to have been tubercular previously to their admission to the works, but twenty-three have contracted the disease since being so employed. The period of incubation would appear to be about two months. M. Arthaud again directs attention to the extreme importance of this question of tubercular contamination in workshops and habitations, of which the foregoing record furnishes additional proof.—*Lancet*.

Playing by Proxy.

People of the United States do a vast deal of playing by proxy. After a great game of base ball, what large editions of our papers are sold, and how many hundreds of dandies, with cigarettes held in their nerveless hands that never felt a base ball bat in their flabby lives, spend their nickels to see whether the Chicagos or Cincinnatis or Clevelands came out ahead! Better five hours with bat in hand, or speeding around the diamond, than a lifetime of

newspaper reading about games played by others. Better a day's vigorous pull at the oars than attendance on all the regattas that ever were. Better a ten-mile walk on your feet than the witnessing of all the O'Learys and Westons that ever trod the sawdust path. Better a twenty mile spin on your own bicycle than all the programmes of all the fancy riders on this planet. Better a thousand-fold the clumsiest activity of your own body and brain than the spectacle of the most proficient amusement-mongers this lazy world ever paid to do its playing for it.—Prof. Amos R. Wells in *Golden Rule, 1891.*

The Rain-Bath.

There is still one kind of bath, hitherto unused, which would be very advantageous, both to parents and children,—I mean a thunder-storm bath. Physicians employ in their experiments on nervous invalids, electric air, electric plates, electric baths; but thunder, or rather thunder-water, they have not as yet prescribed. Have they never experienced that a person never feels so fresh, cheerful, and elastic as after a warm or tepid rain has penetrated to the skin? Since human beings, when dry again after a storm, feel so much invigorated, and the world of flowers still more so, why will they not receive this united fire and water baptism from above, and suffer themselves to be raised and healed by the wonder-working arm in the thunder-cloud?

One ought to have an especial rain or bathing suit of clothes, as a frequenter of the spring cloud-baths; and then, when there is promise of wet weather, make a rain party, and return home dripping.—*Jean Paul Richter.*

Carpets and Infection.

In the wonderful progress in the science and practice of hygiene that has come about during the last ten years, it seems strange that so little attention has been directed to carpets, an evil of which the effects can only be serious and extensive.

Not many years ago it was the pride of hospital managers to adorn their wards with pictures, curtains, carpets, and every device of ornament now condemned; but the teachings of bacteriology so speedily made it clear how and to what extent danger lurks in beauty of this kind, that hospital ornamentation is now a thing of the past. What is true of hospitals is certainly true, though to less extent, of

the homes. We know that every nook and corner not readily reached in the daily or frequent dustings is a nidus for the lodgment, growth, and development of disease germs, and perfect sanitation would require the reduction of these *ad minimum*.

Of all such depositories, none can be more productive of harm than carpets. Here is an excellent bed for the breeding of germs, and in the case of fluids, as, e. g., expectoration, for their subsequent drying and dissemination as dust. The very warmth that commends the use of carpets is a potent factor in the preservation and multiplication of the bacterium.

What can be done to remove this evil? Little, we confess; nothing without scientific agitation of the matter. Perhaps a radical cure is not to be expected, but a compromise may be effected. The necessities of our domestic architecture, the warmth insured, and the quiet that carpets secure, will effectually prevent any attempt at removal; but the same objects may be obtained from small rugs, which can be frequently dusted and at somewhat longer intervals taken to the cleaners for thorough steaming. Large carpets fastened to the floor, and to a less extent large rugs, not easily taken up for dusting, should be condemned.—*Medical News*.

Isolation in Influenza.

Dr. Leeson writes to a London medical journal on this subject as follows: We say "it is in the air," that it is due to "atmospheric influences," and the stricken country pacifies itself with such platitudes, and resigns itself to a species of fatalism and careless conduct in consequence. Sir Thomas Watson, in his Classical Lectures, with rare and prophetic insight, concluded forty years ago that the contagion of influenza, whatever it was, was "particulate."

Viewing influenza in the light of recent researches upon acute specific fevers, there is everything to warrant us in the induction that it is a germ disease; the analogy is complete. My object in this fragmentary contribution is to draw attention to an experiment which to my mind proves that it is not "in the air," in the commonly accepted sense of the term, but passes from the sick to the healthy in much the same manner as do ordinary infectious fevers. Twickenham has been ravaged by the disease. The Metropolitan and City Police Orphanage here, containing nearly 300 souls, is under my medical care. When the disease appeared in our neighborhood, I was particularly desirous that the Orphanage should not

be attacked. My time being fully occupied in coping with the disease amongst the inhabitants of the district, I was especially anxious not to have a sick Orphanage under treatment at such a time; added to which the known tendency of many of the orphans to suffer from pulmonary complaints (many of the fathers having died from phthisis) induced me to take especial care of their safety. I therefore prevailed upon the authorities to institute a most rigid system of isolation. The children were not allowed to go to church, the officers were entreated to keep within the walls and grounds of the building, all visiting was stopped both of parents and friends and the "old boys' day" on Whit Monday (when former pupils come from all parts to visit their old home) was suspended. Now, although the disease has prevailed all round the institution, even in the head master's house which is situated near the school, I am pleased to be able to state that no case has occurred amongst the inmates. I consider this a conclusive proof that the disease is not "in the air," otherwise the children must have shared the fate of the surrounding families; but that it passes from the patients to their friends and neighbors, and those who come into immediate contact with them, in the same way as do measles and scarlet fever. In previous years, when epidemics of scarlet fever and measles have prevailed in this neighborhood, we have always endeavored to preserve the children from infection by adopting the same means as are now in force against influenza, and our success has been nearly as complete. My object in publishing this is to show that influenza can be dealt with as successfully.—*The Lancet.*

Wisconsin Notes on Diphtheria.

One of the most common, and at the same time, most difficult things we have to contend with, is the fact that there are a few who are recognized under our laws as physicians, and many outside of the profession, who either deny entirely the contagious character of diphtheria or who believe it is contagious only when in a malignant form. Cases have been reported to this office not infrequently, where under such belief, encouraged by physicians, no precautions have been taken to isolate those who were sick, or to prevent the public funerals of those who had died. It is to be very greatly regretted that such funerals which have often been a fruitful source of the spread of this disease, are ever permitted to occur. They would not be if the people properly understood the danger from them.

The following report from a correspondent is interesting and instructive: A public funeral was held in this place after the death of a boy from diphtheria, with little boys for bearers, and a choir of children. The wife of the preacher took her Sunday school class into the house to see their dead companion; one of those took the disease and died of it; one of the bearers also took the disease and spread it into his family. The result of this outbreak was fourteen cases of the disease, with four resulting deaths, and one additional case of paralysis. The doctor adds frankly, "I sinned in this matter; I ought to have done then as I have done since—said to the parties peremptorily that such funerals should not be held."

Another correspondent, a physician who is a health officer, speaks of a case in which "every arrangement was made for a public funeral following death from diphtheria, six little girls having been selected as pall bearers." The doctor succeeded in preventing the carrying out of this program only by the issue of positive orders, which had to be enforced by the aid of a marshal.

In contrast to this case in which the doctor simply performed his duty, I present the following history of a shameful case of ignorant, if not wilful, neglect, and a disregard both of duty and the lives of others. "A young man about seventeen years of age, while away from home and at work in an adjoining town, became sick and was visited by a physician who pronounced the disease diphtheria. The doctor advised that the boy be sent to his home, which contained several children, and the advice was followed, but he did not go with him, or apparently notify the family of the danger of contracting the disease, or even visit the case until the third day. The boy died, but before doing so, communicated diphtheria to others of the family, in which there were four additional cases, and two additional deaths.

In addition to the ways already alluded to in which this disease has been spread, there have been reports to this office of some cases in which the evidence was very strong that domestic animals, such as cats, have not only suffered from a disease closely resembling diphtheria, but that they had apparently communicated this disease to children who had fondled them, thus tending to confirm the belief, now quite general, that the disease may be spread in this way.—*13th Report of the State Board of Health of Wis.*

Wisconsin Notes on Scarlet Fever.

Another correspondent reports, in a striking way, his apparently well founded reason for believing that the poison of this disease has remained in an old building for several years. Scarlet fever had prevailed in the building six years previously, in severe form, and the building was not afterwards sufficiently disinfected. For a part of the intervening time it had been unoccupied, and when occupied it was for brief periods, during which it appeared that no repairs or alterations were made in it. On being re-occupied shortly before this report, extensive alterations and repairs were made, and the correspondent writes: "I am satisfied that the tearing out and general overhauling that was done while the house was under repairs released scarlatinal poison, that had been lying there dormant for these six years, with the result of causing an outbreak of this disease from which we are now suffering. Almost simultaneously with this report there appeared in a sanitary journal an account of an outbreak of scarlet fever in England, in which the origin of the disease was believed to have been the disinterment of the bodies of some persons who had died of this disease about thirty years before.—*13th Report of the State Board of Health, Wis.*

PROCEEDINGS OF THE SANITARY CONVENTION.

[CONTINUED]

Adulteration of Foods.

By PROF. F. C. ROBINSON, Member of the State Board.

[CONTINUED.]

But when we pass from the great food staples we find far from so satisfactory a condition as to adulteration. Modern life demands many kinds of condiments and luxuries, put up in fancy forms and packages, and with some of these the adulterator seems to run riot. This is especially true of spices. Formerly such things were bought in bulk and whole, and the spice mill was a recognized utensil in all households. But now they are universally sold ground and we pay for the grinding and more too.

A recognized article of commerce among wholesale grocers is what is called P. D , or being interpreted, pepper dust. It is made by grinding to flour such things as linseed meal, mustard husks, rice and the sweepings from spice factories. This is mixed with a proper amount of the genuine mustard, pepper or ginger or other

spice and we have the beautiful packages of the "pure genuine." This is not simply a fancy tale. The work of chemists in Canada, Massachusetts and New York, gives the same result. Fully three-quarters of all such things examined are found adulterated. In France old olive stones are carefully collected and ground to powder to be used for adulterating spices.

In pickles the only adulteration found are copper salts added to restore the bright green color lost in soaking in brine before placing in the vinegar and sulphuric acid added to the vinegar to give it extra sharpness. Both practices are dangerous. It is a safe rule not to eat a bright green pickle without being sure that it contains no copper salt.

Another article of food very commonly falsified is olive, or salad oil. Of 232 samples examined a year or two ago in New York and Massachusetts, 165 were adulterated. Cotton seed oil, rape seed oil, poppy oil are all used for such purpose. None of them are poisonous perhaps, but they are not olive oil, and some one makes a large illegitimate profit from their use in place of it.

The butter question has been so thoroughly taken up by the government, and so fully discussed in the papers that I need not take up your time in discussing it here. Oleomargarine is still largely made and of course largely used in place of pure butter. But all necessary legislation relating to it has been passed, and violators of it are looked after carefully by the United States officers.

As to coffee and tea, I can only say that what was said about spices applies to them, that is, where they are sold whole they are generally pure, but when sold in packages liable to be adulterated. The chief adulterants of the cheaper grades of teas are leaves of other plants resembling tea leaves or even tea "grounds" or spent leaves. Chinamen, as is well known, simply pour boiling water over their tea, let it stand for a few moments and drink it. This extracts a large part of the alkaloids, theine and caffein, but does not take out much of the coloring matter, and tannin. These old leaves are re-dried and sold in the cheaper grades of tea which come to this country. Old tea grounds are said to be collected in London for the same purpose. Cheaper grades of tea, too, sometimes have their weight increased by skilful addition of clay or fine sand colored by indigo.

The special adulterants of coffee are chicory, dandelion, caramel, dried beet roots, etc. In foreign countries the addition of chicory

is countenanced and not regarded as adulteration. In fact it is almost impossible to obtain coffee there which does not contain it.

Of 151 samples of ground coffee recently purchased and examined, 69 were found adulterated. Such adulterations are generally harmless but in some cases poisonous colors have been found used to make the sample appear like the best grade of pure coffee.

What I have thus far stated are the recognized adulterations which have been known to chemists for many years. They prevail with different degrees of force in all countries. But there is a kind of food adulteration which is modern, and without doubt increasing in amount; and which we in Maine must watch carefully for, and check if possible. It has to do with preserved or canned goods, and has grown up connected, not so much with the goods themselves, as with the preserving of them. No greater blessing has come to modern living than the advent of "canned things," and the extent to which this is appreciated, every dust pile or vacant lot near our cities or towns bears witness. Meats, fish, vegetables, all are so treated. The agitation over the tin duty bears witness to the enormous use of this metal in the cans for preserving food.

Now the principle of the canning process is well known to us. Air and its germs are kept out by sealing the tin can when hot and no decay can take place. Theoretically the process is simple and the result easily obtained. But packers have learned to their cost that many difficulties arise and much loss is liable to occur by the spoiling of the canned product. The temptation has been great to use some antiseptic to make the preservation more sure, and evidence is beginning to accumulate that many have been unable to withstand it. Now as a general thing antiseptics are poisonous, and great care must be used in dealing with them. Those of them, too which are not recognized poisons are injurious if taken into the stomach. They tend to arrest fermentation and the digestive powers depends on a kind of fermentation.

Here again I am relying upon the work of other chemists almost wholly, and even they have made as yet no thorough investigation. Enough has been done, however, to make it sure that many canners are having less cans "go up" not so much from increased care in sterilizing them by heat as from the use of preserving chemicals. A significant fact bearing in the same direction is the large demand for just such things as might well be used for such purpose, such as salicylic acid, saccharin, sulphites of lime and soda, etc. Not

long ago an agent for a preserving powder of some kind traveled through our State offering to meat-men something which by rubbing it on would keep meat fresh for many days even in warm weather. I tried to get some for analysis but could not. The question might well be asked, what are our corn packers doing in this line?

Here, too, a word might be said on the beer question, even though it be a repetition of what I have already said in public. In order to avoid our liquor laws, as well as the paying of a United States license, various so called beers and temperance drinks have appeared in the market in large quantities during the past season. These almost invariably contain some antiseptic like salicylic acid, or sulphurous acid, or hydronapthol, to keep them from souring. Indeed chemists in other states have shown that even the regular standard lager beers in many cases contain notable amounts of such things. Now it may seem to some to be a merciful provision to poison all such things, but I hardly think that we as health officers would take that position. And yet we must see that the large consumption of such things by our people is at the expense of ruined health. A sample of so called "orange wine" which perhaps many of you have seen, when analyzed proved to be tartaric acid, colored with yellow dye and preserved with salicylic acid. The red lemonade sold on circus and muster days by traveling dealers is commonly made from tartaric acid dissolved in water and colored by cochineal.

But I have already taken up, perhaps, more time than I should and must close. I promised to make as candid and fair a statement of the problem of adulteration in Maine as I could, and trust that I have done so. It is a topic that is being given more and more attention in other states and unless we wish to become a dumping ground for all the adulterated articles which cannot be sold elsewhere, we must take up the matter here, see that stringent laws are passed, and rigorously enforced.

Mr. Burgess.—Prof. Robinson said that the cheaper grades of molasses were not adulterated. Is it not true that the high priced molasses like New Orleans and Porto Rico are still adulterated?

Prof. Robinson.—It was at one time and perhaps may be to some extent now, but I was unable to find any in the market and I got several samples at one time. A few years ago they had molasses on the market which was almost all glucose. Of course glucose

syrup is made in enormous quantities in the country but there is not so much use for it as there formerly was.

Mr. Burgess.—I remember one time a cargo of molasses that came from New Orleans was bought at the plantation because it was supposed to be perfectly pure. It lay for a little while in the store-house on Commercial street when some one came in and bought a few barrels. They took out the bung and rolled it over and the molasses wouldn't run out. It had all the appearance of glue which was partially dissolved in water; it looked like jelly and it could only be taken out by means of a spoon. It was afterwards ascertained that a regular trade existed between the Buffalo House, where so much of this syrup was made, and the plantations on the Mississippi river, and that large invoices of the glucose syrup went down the river and was mixed with the molasses at the plantation. In the case I allude to they overdid the business. It is stated that, in the trade that is still pursued, and that purchasers of New Orleans molasses buy considerable glucose.

Prof. Robinson.—That illustrates the statement which I made that the adulteration is made largely at the headquarters and not by the local dealer. The recent investigation by Government Commissioners showed that the adulteration of brandy was done in France and Spain and not so much here.

Mr. Burgess.—I heard recently our Ex-Consul to Spain say that while he was in Cadiz there were large invoices of alcohol received from this country into Spain for the express purpose of adulterating wines which were reshipped to this country as pure. I think we all ought to be very thankful to Prof. Robinson that he has left us a few things that are not adulterated so that we can eat breakfast to-morrow morning without fear of being poisoned. I should like to ask if terra alba is not still used in candy. I have occasionally seen some about the house which was certainly tasteless and left a sticky, pasty taste in one's mouth, although beautiful in appearance.

Prof. Robinson.—They put the terra alba into the moulded candies. The colored and common grades of broken candy do not contain it. But the moulded or pressed forms, which look exceedingly white and floury are very apt to contain terra alba. They ought never to be bought for they are almost tasteless and are not candy.

President Jordan.—Since adulteration is so flexible, I should like to ask if there is not a method of handling molasses in such a way

as to make its bulk greater. I have had pointed out to me a place where it was said they mixed molasses so as to increase the bulk.

Prof. Robinson.—They mix various grades together and add a little water to make it thinner; the increase of bulk comes from adding the water. Putting a cheaper grade into a better grade and working in a little water makes it lighter in color and if they get the original price for the article of course there is a profit in it. I believe that is done skilfuly by some importers.

Mr. S P. Maybury of Cape Elizabeth said he had heard bakers say that they preferred ammonia to anything else for the purpose of raising bread.

Prof. Robinson.—Carbonate of ammonia is the best baking powder if the bread is baked so as to drive it all out.

Dr. Meserve.—I remember being in a bake shop looking over the process and the baker told me that he always put carbonate of ammonia into his cake because it was better than soda; that, in the process of baking, it entirely evaporated and the cake kept better without drying up.

There is another substance used in the adulteration of spices, and that is white oak bark. A friend of mine, a few years ago was in a yard connected with a building used for the manufacture of spices in Massachusetts. He discovered two or three cords of white oak bark and he asked the man if he ran a tannery. He said no, they didn't tan leather, but they tanned their spices, that it made a convenient article to mix with cassia and spices of that kind. The adulteration may not be dangerous to the public health, but it is nevertheless a fraud. I was very glad to hear the Professor give the advice that if baking powders must be used, to use cream of tartar and soda. There is now going on a controversy between two rival houses in relation to the merits of their two baking powders. I presume all of the physicians of our city have received circulars asking the question, "Do you consider carbonate of ammonia in baking powder injurious?" Now I happen to know that there are two rival firms. The head of the firm which made the Royal baking powder is a physician who has made a fortune out of that article. A few years ago he sold out his interest in that property to another firm and bought into another, the Cleveland baking powder, and then he commenced an opposition to his original powder, and is now condemning and working against it and says it ought not to be used because it contains carbonate of ammonia. This circular letter that I received was sent in the interest, probably, of Cleveland baking powders manufactured by Dr. Hogan of New York. I shall not answer the circular, not because I think it is very injurious, but I do not wish to figure in the controversy at all. The question of the adulteration of lard, so very strongly brought out a few years ago between Squire of Boston and Fairbanks of Chicago, let considerable light into the lard business. If both parties told the truth there was very little difference between them, and the operations of one were about as honest as those of the other. I think about the only way that we can be sure of pure lard is to buy the leaf and have it tried in the kettle at home.

THE

SANITARY INSPECTOR.

VOL. V, No. 9. MARCH, 1892. 25 CENTS A YEAR.

Notes, Sanitary and Otherwise.

There shall be a local board of health in each city and town in this State to be composed of three members, anything in the charter of such city to the contrary notwithstauding.—Laws of 1887.

The word "town" includes cities and plantations, unless otherwise expressed or implied.—Revised Statutes.

Dr. Guinard of the Veterinary school of Lyons, France, has made a study of the changes in boiled water from a hygienic point of view. The boiling of water is a valuabe resource when epidemics prevail. M. Miquel has shown that the water of the Seine loses nearly all its micro-organisms in boiling; 950 out of 1000. The refractory bacteria are almost never of the pathogenic kinds.

Last year an outbreak of trichinosis occurred among the sailors on board a German bark lying in the harbor of Iquique, and the trouble was at first reported to be due to the eating of salted pork from the United States. The subsequent reports, however, in the German medical journals, showed that this was incorrect. May 2, the cook went ashore and bought a piece of fresh Chilian pork. A part of this was shaved and eaten raw with salt and pepper. The captain and four sailors ate none of it raw and were not affected. All the other seventeen men partook of it, and at the time of the sailing of the bark thirteen of them were severely sick and had to be left behind. This is still another warning, that few Americans, but many Germans need, not to eat pork unless it is well cooked.

Sanitation and Life Insurance.

It is getting to be a very common thing for life insurance companies to show an interest in public health work, and the following from "*The Associate*," the little publication of the Maine

Benefit Association, indicates that the money value of such work in this State, as well as the humanitarian side of it, is appreciated:

"Lack of space and a desire to avoid wearying my readers, forbid me to make more than a passing mention of the possibilities of the prevention of contagious diseases by seclusion of the patient and thorough disinfection of the person and all the surroundings after convalescence. Full instructions in such matters are given by our State Board of Health, which deserve the cordial sympathy and support of every one, for the valuable work which they are constantly doing. In our own State any inquiries in reference to the details of management of contagious diseases as regards disinfection, or concerning the precautions necessary in cases of typhoid fever or diphtheria will be answered by the secretary of the State Board of Health at Augusta, who will cheerfully give all necessary information in the form of circulars which have been prepared for such purposes. I cannot too strongly recommend any person desiring additional information on these subjects to write to the secretary at Augusta."

Cobweb and Blood Poisoning.

Among the popular but ineffective and even dangerous means for stilling the flow of blood from wounds is cobweb. By the people in the country, especially, this material is easily obtained and frequently used by binding it upon the injured part, or by pressing it into the wound. By this means slight flows of blood that are without danger are arrested, while more serious bleedings usually persist in spite of it. But at the same time the wound is soiled to a serious degree, for often the cobwebs are collected from dirty and dusty corners. In the use of this material the rule which should never be broken is disregarded: to wit, to protect every wound, be it never so slight, from every source of pollution, and if it is already soiled with sand, dust or dirt of any kind, to remove it and cleanse the wound as soon as possible with water that has been boiled and cooled again, or with a disinfecting solution. Another example of the harmfulness of this use of cobwebs has lately occurred. A gardener injured himself and put cobwebs on the wound to stanch the blood, thereby soiling the wound to such an extent that he died of blood poisoning.—*Schweiz. Blätter für Gesundheitspflege.*

The Atmospheric Hypothesis of Epidemics.

A paper on "The Untenability of an Atmospheric Hypothesis of Epidemics" was read by the Hon. Rollo Russell at a recent meeting of the Royal Meterological Society. The author is of opinion that no kind of epidemic or plague is conveyed by the general atmosphere, but that all epidemics are caused by human conditions and communications capable of control. In this paper he investigates the manner of the propagation of influenza, and gives the dates of the outbreaks in 1890 at a large number of islands and other places in various parts of the world. Mr. Russell says that there is no definite or known atmospheric quality or movement on which the hypothesis of atmospheric conveyance can rest, and when closely approached it is found to be no more available than a phantom. Neither lower nor upper currents have ever taken a year to cross Europe from east to west, or adjusted their progress to the varying rate of human intercourse. Like other maladies of high infective capacity, influenza has spread most easily, other things being equal, in cold, calm weather, when ventilation in houses and railway cars is at a minimum, and when perhaps the breathing organs are most open to attack. But large and rapid communications seem to be of much more importance than mere climatic conditions. Across frozen and snow-covered countries and tropical regions it is conveyed at a speed corresponding, not with the movements of the atmosphere, but with the movements of population and merchandise. Its indifference to soil and air, apart from human habits depending on these, seems to eliminate all considerations of outside natural surroundings, and to leave only personal infectiveness, with all which this implies of subtle transmission, to account for its propagation. —*Science.*

Tea as in China and Japan.

We read in the British Medical Journal: A death this week of a boy, aged seven years, ("shock produced by drinking hot tea without milk,") forcibly and sadly emphasizes the particular vice of the ordinary English method of drinking tea. The tea had been left for some time "in the oven to warm;" that is to say, it was a strong decoction of tea leaves to which time had been given to extract all the tannin, and which had then been re-warmed. It was then drunk without milk; that is to say, the tannin was not converted into a relatively harmless albuminous tannate by the addition

of milk. It is precisely because our English method of "making tea" from such infusions of tannin, as well as of theine that tea is so injurious to the digestion, and as in this case, when taken in unusual strength, on an empty stomach, and without milk, becomes an irritant poison. No people who know how to make tea use milk with it—neither the Chinese nor the Japanese; but then the hot water (not boiling) is poured on to and off the leaves at the table, and as soon as the liquor becomes of a pale straw color. The pot is always a small China one, and the hot water kettle is brought alongside it on a table. Half a minute suffices for the first infusion. It is a very grateful and refreshing beverage, this "honorable tea," which one sips at frequent intervals in the far East; but of course it would be and is, insipid and not worth drinking if its flavor be drowned by sugar and milk. No people in the world drink so much tea or so often as the Japanese, and Europeans in Japan easily fall into the same habit. No word is ever heard of its being injurious or a source of indigestion, but that is because they take care not to extract the tannin from the tea leaves, and we take great care to do so. That is why we say persons who live on tea and bread and butter have weak digestions, and why this poor boy was poisoned.—*Pittsburgh Medical Review.*

Disinfection of Dental Instruments.

There is no department of surgery, writes Dr. Miller of Berlin, in which the demand for antiseptic procedure is more urgent than in dentistry, for the reason that all the operations are performed upon septic or infected tissues, and there are no means of rendering the territory to be operated upon aseptic except by the use of antiseptics of the highest character. The necessity of absolute cleanliness on the part of the dentist, of his hands as well as his instruments, diapers, drinking glasses, rubber dam, in short, of everything which comes in contact with the patient's mouth, is universally recognized, and yet it is not difficult to find persons engaged in the practice of dentistry who neglect this matter to an extent that is revolting to the taste and dangerous to the health.

In regard to the possibility of transmission of disease, such as pyemia or syphillis, by dental instruments, there have been so many cases recorded in dental and medical journals that the matter should be familiar to every practitioner of dentistry. * * * Dr. Miller has performed about a thousand experiments, and

gives in a tabular form the results obtained with the most noticeable agents. Of carbolic acid, he says the impression exists among a great many that it is but necessary to dip the instrument in the solution for a fraction of a minute in order to render it completely sterile, but thorough sterilization with a five per cent. solution cannot be counted upon with moderate certainty in less than an hour, and a large burr, such as is used with the dental engine, after two hours' exposure was still found to contain living germs. Trichlorphenol gave slightly better results. Bichloride of mercury in a five per cent aqueous solution was found to be by far the most prompt in its action of all the substances tested, but its powerful action upon steel interferes very seriously with its constant use for sterilizing instruments made of this material. Peroxide of hydrogen came next to carbolic acid, but was considerably inferior to it. The essential oils utterly failed to produce the desired action. Boiling water, especially when a two per cent. solution of carbonate of soda is added, is, in Dr. Miller's opinion, far superior to all other means for sterilizing; it will accomplish in two minutes as much as the chemical agents ordinarily used will in half an hour.—*The Lancet.*

Facts About Scarlet Fever.

From the study of statistics and the facts derived from actual experience with scarlet fever in his State, Dr. C. N. Hewitt, Secretary of the State Board of Health of Minnesota, gives in his circular on "Scarlatina," the following brief of truths that should be known about this disease:

That scarlatina is most fatal in young children under five years (65 per cent).

That 33 per cent of all deaths occur in school-going children.

That it has not proved fatal, in the last five years in Minnesota, to persons over thirty years of age.

That it is most fatal in the spring, but mortality begins to rise in the late fall, and increases till May.

That the mortality to persons living, is greatest in our larger cities, and least in scattered population.

That these statistics support conclusions based on other evidence that the disease is spread largely by personal contact and infected clothing, chiefly by the last.

That schools are largely instrumental in spreading scarlatina as above.

That the isolation of the sick and of infected persons, with thorough disinfection of persons and things, are our most reliable measures to control the disease.

The additional facts of this disease needful to be known for its prevention or restriction are:

First.—That its special infection is developed in the eruption in the skin, and given off thence to persons and clothing and to bedding and other things in occupied rooms, and that it continues to be given off constantly till the skin is entirely well and all scurf or scurfiness has disappeared.

Second.—That the slightest attack of the disease in one child may provoke a severe attack in another exposed to it, and that when it is epidemic a large proportion of the cases are often of so slight a type as not to be recognized at first, or, often, till the infection has been given to others.

Third.—The period of "incubation" (time from taking the infection till the first symptoms appear) is rarely longer than seven days (one week), sometimes but a few hours.

Fourth.—The patient is infectious, and so, dangerous to others, for at least forty days and as a rule for seven or eight weeks, i. e., till the skin is entirely well and free of scurf, particularly on the palms of the hands and soles of the feet.

Fifth.—Ths infection preserves its virulence in clothing and bedding hung up in closets or packed in trunks, clothing of the patient or his attendent or others exposed to him. So stored, the infection clings to such things, sometimes for months, ready, when the article is shaken in the air or worn, to float off and infect the nearest child.

Sixth.—Boiling water will destroy this infection in clothing or bedding, and a strong solution of quicklime will do the same for floors and walls if freely applied. On the person of the sick a simple ointment (one part mutton tallow and two parts fresh lard melted separately and mixed thoroughly till cold) is the best and easiest means of limiting the spread of the infection. Used all over the body it does two things—relieves the fever and itching of the rash, and confines the loose particles of skin containing virus to its surface or to the body clothing or the sheets of the bed, thus preventing its escape into the air.

The Relation of Human and Animal Diseases.

By F. L. Russell, D. V. S., State College, Orono.

The thought is often brought home to even the superficial observer that our domestic animals suffer from *similar* diseased conditions to those that affect their owners. But how close is this similarity and how interdependent these conditions has often escaped the observation of the most thoughtful. Men who have made a study of the diseases of our domestic animals frequently hear physicians affirm entire ignorance in relation to all medical knowledge outside of the human field, and their tone and manner sometimes give the impression that they are proud of their professed ignorance. When necessity compels them to prescribe for one of their domestic animal servants, their practice sometimes lends countenance to their profession. A case to illustrate this came within my personal experience only a few weeks ago. A successful surgeon brought to me for treatment a horse that he was accustomed to use in his practice. In giving the history of the case he stated that after a few hours rest following a hard drive over a rough road, he found the horse quite lame, and, on examination, he discovered that one back joint was hot and swollen. He at once concluded that it must be a bone spavin, and applied freely that widely advertised cure-all, "Kendall's Spavin Cure," rather a violent irritant. He excused himself for such barbarous and unwarrantable treatment on the ground that he knew nothing about the treatment of horses. I did him honor for his honesty, if not for his good sense. If he had recognized the fact that the same pathological conditions exist and the same structures are involved in an acutely inflamed joint of a horse as in an acutely inflamed joint of a man, he would not have adopted treatment so at variance with all his knowledge and practice.

It is sometimes profitable to remember how nearly alike are man and beast in physical and mental characteristics. They possess the same blood and bone, muscle and nerve. The embryos are indistinguishable, the same developing process takes place, they contend against the same destructive processes, and finally terminate in indistinguishable dust. The horse, like man, is influenced by love and hate, by hope and fear, by experience and observation. Close as is the physical and mental relation it is nothing more than reasonable to expect to find a close relation existing between their diseased conditions, particularly as they have essentially the same

environments. The exaggerated statement is sometimes made that the horse has just the same diseases as man. This is no more true than it would be to say that they are exactly the same as man in physical and mental characteristics. While closely resembling their masters, they yet possess an individuality in sickness as well as health.

The diseases that our domestic animals suffer from are, of course, due to a variety of causes. Many of them may be said to result from the work required of them, and the artificial lives they are required to live. The horse is very liable to suffer from disorders of his feet and legs and from digestive troubles resulting from irregularities of food and exercise. The cow, developed for the production of milk, is frequently a victim of a disordered udder, and she is particularly liable to digestive troubles on account of the extreme length of her digestive tract, which her owner is continually filling with whatever nutriment he thinks she can grind the most profit out of. The sheep, the hog, the dog, the cat, all likewise have their prevailing disorders due to their artificial environment. Other diseases are directly traceable to such causes as heat and cold, wet and drought, affecting different animals differently according to their physical conditions and inherited tendencies.

All these diseases thus far referred to result from common causes that act on the whole animal kingdom without regard to species, and no individual can be said to be more liable to them because other individuals are affected. It may be said that when animals that are used for food suffer from these non-contagious diseases they endanger the health of their consumers, and in this way this class of diseases in animals bear an important relation to diseases in man. But the danger from this source may be considered very slight, for it is not probable that such diseased flesh often finds its way into the market, and, when it does, its injurious effect cannot extend beyond those primarily affected. It is with contagious diseases that we are chiefly concerned, for, can it once be shown that the germs of a disease can be transmitted from the lower animals to man and produce the same disease in him, it becomes a serious question how it shall be prevented. It is with diseases due to specific causes that I wish especially to deal in this paper, for in the case of many of these the relation between diseased animals and diseased human beings is very close.

The idea that it is possible for human beings to control, or even

prevent entirely the spread of contagious diseases, is of comparatively recent origin. The discoveries of the last decade have thrown such a light upon the causation of disease that much that was previously regarded as due to a dark and inexplicable providence is seen to be due to agencies entirely under human control. The germ theory of disease is no longer a theory, it is an established fact. It is a well proven fact, I say, that certain diseases are caused by the presence in the system of the patient of microscopic living organism. These organisms have their distinctive characteristics that enable the bacteriologist to distinguish them, and to identify the different species, and it is by means of this fact that it is possible to trace the relation between diseased man and animals where it would otherwise be impossible. It has been demonstrated beyond a doubt that the same species of micro-organisms produce diseases in man and animals, although these diseases may differ somewhat in their symptoms according to the species affected.

Time will not permit, neither can I enumerate all the diseases that are common to man and animals. Recent investigations have revealed some and have proved the identity of others where it had only been suspected before, and it is highly probable that future discoveries will show that a relation exists where it is not now suspected. Some of the most actively contagious diseases of animals, such as influenza in horses, rinder-pest, and Texas fever in cattle, foot-and-mouth disease in sheep, swine plague and hog cholera in swine, and chicken cholera in hens, are not known to affect human beings. But it should be remembered that active agents in the spread of these diseases have not yet been positively identified, and how can we say they have no injurious effect upon man.

No fact in bacteriology is better established than that the same pathogenic organisms affect different susceptible species in a different manner and degree. The virulent culture of the swine plague bacillus that will cause the death of an inoculated rabbit from acute septicæmia in from fifteen to twenty hours will have little apparent effect upon a white mouse for two or three days, and after that produce death due to organic changes. The guinea pig inoculated with the same material may be sick for a time and then completely recover. It is also well known that, in the same species of animals, the same disease agency manifests itself differently in different individuals, so that good diagnosticians are often at fault in identifying some of our most common contagious diseases. This being true, it is certainly possible that some of the contagious diseases that prevail

among human beings, and of which the active agent has not yet been discovered, also prevail, in a modified form among the lower animals, and while the known channels of communication are guarded these diseases may be spread by this unsuspected means.

But enough speculating in regard to what may be true. There are some diseases in which the agency of animals as a means of transmission is fully established, and in which the connection is so intimate that the suppression of the disease in one class of patients cannot fail to favorably affect all. The list of these diseases is not a long one. It includes rabies, tetanus, anthrax, glanders, tuberculosis, and perhaps one or two others. All of these are serious diseases, but as I cannot well discuss them all in the limits of this paper, I wish to dwell particularly upon tuberculosis.

When we consider the relation of animal and human tuberculosis, its relative importance causes all other contagious diseases to sink into insignificance. It is a disease of such an insidious character, and so appalling in its results, that it well deserves all the attention that is given to it. He who can by any means lessen its ravages obtains and deserves great honor, and yet but little has been done in this direction. Thanks to Koch's discovery of the tubercle bacillus we are no longer in the dark in regard to the true cause of the disease, and in the place of a hidden, unrecognizable enemy, we have one whose lurking places are well known and whose identity is readily established. The disease has masqueraded under several names but can do so no longer. Whether it affects the lungs, stomach, bowels, brain or lymphatic glands of man or beast, it is the same lurking, persistent, cosmopolitan disease. But, however wide-spread it may be, it can only be produced by one recognizable, preventable cause, viz: a living organism, and there is not the slightest evidence to show that this organism is ever naturally produced except in connection with tuberculosis in some diseased animal. That it is produced in this manner is abundantly proved, and so every tuberculous subject, man or beast, is a menace to the health of those about him. Other things being equal, that species which is the most subject to tuberculosis would be the most prolific source of contagion. But the near presence of the tubercle bacillus in an animal does not necessarily render that animal a source of contagion. It is not the germs of disease retained in an infected animal that endangers the health of others, but those germs that are given off from such diseased animals. So these two elements enter into a fair estimate of the danger that is encountered from any par-

ticular species of animals, viz: the prevalence of the disease and its communicability.

As to the prevalence of this disease, I am not aware that we have any reliable statistics, and from its very nature we cannot have with our present means of diagnosis, for in many cases, particularly in our domestic animals, a diagnosis can only be confirmed by an autopsy. That it is alarmingly prevalent among human beings is sufficiently apparent from the fact that estimates based on fairly reliable statistics attribute from one-tenth to one-seventh of all deaths to this disease.

As to the prevalence of tuberculosis among our domestic animals, we have almost no data available in this country. From European statistics the estimate is made that one in two hundred of their cattle are affected. In this country the best estimate we have is based upon about thirty thousand cattle killed at Brighton, most of them Western cattle. This shows that one in five hundred of our cattle are affected. Of about two hundred fertilizer subjects, cows that died a natural death about Boston, one in twelve were found to have died from tuberculosis. How these figures will agree with the condition in other parts of the country we cannot say, but for obvious reasons one case of tuberculosis out of every twelve cattle about Boston would be a very high estimate based upon these figures.

There are two, and possibly three methods by which the bacilli are given off by diseased cattle. The germs are coughed out, are given off in the milk, and perhaps sometimes are excreted with the feces and urine. It is a mistaken idea that cattle *breathe* out disease germs. It has been frequently demonstrated that bacteria are not readily given off from a moist surface such as the bronchi and trachea, but are only expelled by such a violent expiration as also dislodges mucus and saliva. The nasal discharge containing tubercle bacilli, I have never seen in bovine tuberculosis, and do not think it is characteristic of the disease although some writers on the subject mention it as though it were common. Most of the material thrown off from the tuberculous lungs is probably swallowed, and it is not unlikely that the seed of tuberculosis sometimes escapes the digestive process and is thrown off with the feces. The feces are still more likely to contain tubercle bacilli when the digestive tract itself is the seat of the disease.

That the milk of tuberculous cows sometimes contains tubercle bacilli is abundantly proved. In human beings tubercle bacilli are

probably given off by the last two avenues mentioned, but the principal way is through the mouth by means of the sputum. All tubercle bacilli, excepting those contained in milk, must become so dry that they can be conveyed as dust in the air before they are a source of much danger. In the dry state they retain their life for a long time, how long we do not know. While their life lasts they are a constant menace to the health of man and beast. Where no precautionary measures are adopted, the danger from tuberculous dust and tuberculous milk bears a direct proportion to the number of men and animals that are the source of this disease-producing material. Now what precautionary means can we adopt, and what are we doing to check the spread of tuberculosis? Theoretically all our germ produced diseases are preventable, but owing to its cosmopolitan nature it is evidently not practicable to entirely prevent tuberculosis by any known means. But a measure of success is worth whatever effort it requires, and this fact is coming to be recognized in dealing with bovine tuberculosis. In dealing with the disease in cattle, the most important object is to protect human lives. To accomplish this no sacrifice of property or expenditure of effort within reasonable limits should be regarded as too great a price to pay where human life is at stake. A careful inspection of all dairy animals and the destruction of all found affected is the least that should be done. The destruction of such cases as happen to come to the notice of the proper officials is something, but it is not nearly enough. When we look to see what is being done to check the spread of tuberculosis from affected human beings, the veterinarian does not see much to encourage him in an attempt to suppress bovine tuberculosis. To quarantine and kill tuberculous cattle and do nothing to limit the spread of human tuberculosis is about as sensible as to expect to dry up a large river by cutting off a few tributary springs. When we see persons in advanced stages of phthisis walking the streets, occupying seats in churches, halls, and public conveyances, living in the closest relations with the members of their families, and everywhere spitting out the seeds of disease, we do not wonder at the prevalence of tuberculosis, and are reminded that something should be done to prevent this. In civilized communities public sentiment demands that those affected with small pox, and most other contagious diseases shall be isolated for the protection of the public, and I believe the time is soon coming when some effective protection from this most deadly of all contagious diseases will be demanded.

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Notes, Sanitary and Otherwise.

This is to remind some local boards of health that their annual report has undoubtedly not been sent as the law requires, and to say that even now it can be used.

Because there is no perceptible desquamation after mild cases of scarlet fever, it is a great error to suppose that the child will not be in an infectious condition for quite a spell after recovery. Just as the skin emits an insensible perspiration when there is no visible sweating, it is continually shedding imperceptible particles, or scales, in health or disease. The inner surface of a garment worn next to the skin shows with the help of the microscope a great abundance of this exfoliation even in health.

Referring to the discussion at the Hygienic Congress on the alcohol question the *Medical News* thinks that there is a sort of uncomplimentary concession to the weakness of the flesh in the theory put forward that, as most of us come of ancestors that drank, we should be well advised not to revert rashly to a more innocent regimen.

A public bath of that variety known as the rain bath, or shower bath was established in the centre of the tenement house district in New York, the past summer. Contrary to the opinion of the promoters of the scheme the people of the neighborhood show themselves to be very eager to avail themselves of the privileges of a new bathing place, as evidenced by the fact that one hundred and twenty-five persons patronized it the first morning it was open.

Notes on The Hygiene of Instruction.

A beneficent law of California forbids children under eight years of age to be in school more than four hours a day.

Education should have the threefold object of watching over and directing the development of the body, the intellect, and the character.

The five hour forenoon session is to be wholly avoided.—*Cohn.*

In many of the German schools each study hour is limited to fifty minutes, with ten minutes for rest and play before beginning the next hour's work.

Two o'clock is the most judicious hour for opening the afternoon session.

The practice of requiring writing hastily from dictation tends to spoil the handwriting of the pupils. Here, as in everything else, the trail of the serpent of high pressure is over it all.

Teachers who can be nothing but "living aversions to little ones" should forever be banished from the school room.

The child should be led and attracted rather than driven.

Great rewards, says Montesquieu, betoken a falling state; the same is true of great punishments in the school-house; yea, and in the state also. Not great but unavoidable punishments are mighty, truly mighty.—*Jean Paul.*

Fear cripples the memory, both by producing physical weakness and mental irritation; the frost of cold fear chains every living power which it approaches.—*Jean Paul.*

"After all," says Dr. Fitch in lectures on teaching, "the great safeguard for good and happy discipline in a school is to fill the time with work. If a child is to have an interval of leisure, let it be in the play room or ground, where relaxation is permissible and even noise is not a sin. But let him have no interval of leisure in school."

A German teacher says: "Permit the pupil considerable freedom of motion, and of childish vivacity, make the instruction interesting, accustom to obedience, then attention, and the proper attitude will not fail."

The strain and excitement of "examination" should be obviated altogether or reduced to a minimum.—*Dr. Wallace A. Briggs.*

Sunday rest should be an inviolated rule of life of the actively studying pupil.

For obvious physiological reasons, teachers should caution the pupils against doing any school work during the noon intermission, or late in the evening.

With reference to the danger of injury to the hearing, we as teachers and parents, are warned by an Italian writer, to spare the human ear. "Rabbits alone may be seiz d by the ears, horses by their manes, mice and pigs by their tails, fishes by their gills, but the human being must be led by his heart and brain."

"Those who would make of the school a sort of combined cotton mill, dairy farm, savings bank, butcher shop, and theological seminary, would soon convert it into a howling wilderness, should they have their way. The schools now do fully enough killing and none too much up-building. Let us seek to simplify rather than to further their machinery."—*Lewiston Journal.*

There is a large amount of medical experience recorded of the pernicious efforts of undue study, long lessons, many studies, memorizing, competition, prizes, scholarships, etc. Every physician is meeting with cases of brain trouble from something vicious in the plan and course of study. Its range is all the way from brain weariness and nervous exhaustion to congestion and fatal inflammation of the brain or insanity. We have seen many such unfortunate cases, but it is difficult to convince the teacher or parent that study was an element in the case. They always ascribe the result to some accident, some blow or fall. Sometimes a slight injury might be the exciting cause of meningitis in one whose brain has been predisposed by over excitement in study.—*Dr. M. Storrs.*

In her book on "Education From the Cradle," the Russian Princess Ouroussoy gives the following salutary caution against leading children to think too much about themselves:

"Generally speaking, nothing is more disastrous than are remarks on ugliness, stupidity, beauty and intelligence. The only remarks allowable are those which concern the personal actions, and they should never be made about anything outside the province of the will, such as the appearance and the intellect. Such remarks lead to too much introspection, and make a merit or a crime of what is beyond the child's control. We ought rather to occupy his mind with something which can take him out of himself. By observation, laudatory or the reverse, we develop presumption in some and morbid anxiety in others."

"It is a mistake to try to force children to sit still even for half an hour in the same position. It is right to insist that all the pupils shall sit in a uniform position while engaged at the same lesson

It is wrong even to allow them to sit for a minute in ungraceful or unhealthful positions. The teacher cannot be too exacting in these particulars, but the same position should not be continued too long. This is especially true in the case of little children, whose bones are not hardened. The muscles will weary of sustaining the weight of the body in any position too long, and the weight being thrown on the flexible bones will bend them out of their proper shape.

The judicious teacher will not attempt to restrain the restlessness of junior children, but will give it a natural outlet. There is no other so good as light calisthenic exercises, accompanied by singing. These are exceedingly interesting to the pupils, and give the needed exercise and change to the muscles that have been wearied in one position."—[*Jas. L. Hughes, Inspector of Schools, Toronto.*

Periods of Infectiousness.

Dr. Arthur Ransome, Owen's College, Manchester, sought to investigate the period of infectiousness of some of the infectious diseases by means of a circular letter sent to the English physicians. The results arrived at are that measles are infectious before the appearance of the eruption (in one case four days before.) The period of communicability extends to thirty-one days after the receipt of the infection. In four cases of scarlet fever the disease was communicated from twelve to twenty-four hours before the appearance of the rash, and in two cases it was communicated six weeks after the beginning of the disease. Mumps was shown to be infectious two weeks after the cessation of the fever, or three weeks altogether. Diphtheria is infectious from the receipt of the contagion until complete recovery, in ordinary cases about thirty-three days. The milder forms of small-pox are infectious five weeks; in the severe form eight weeks —[*Zeit. f. Schulgesundheitspflege.*

Errors in the Feeding of Infants.

No mistakes are more pregnant of mischief than those connected with feeding. The chief points with regard to which faulty practices prevail are the following:

1. *The sudden weaning of infants on to fresh cow's milk and water.*—The large curds of cow's milk are often beyond the feeble digestive powers of the infant. The undissolved clots under

favorable conditions of heat and moisture ferment and set up colic, vomiting, or diarrhoea. Boiled milk with barley water seems to be much more readily digested. In the case of very delicate children the milk should always be peptonized at first.

2. *Insufficient gross amount of nutritive material.*—For example, a child is found unable to digest a mixture of cow's milk stronger than one in four. The capacity of the stomach, however, is limited, and it is impossible for it to take a sufficient quantity of this mixture to supply the material required for growth and nutrition. The difficulty may be overcome by adding some cream or perhaps some of Valentine's meat juice.

3. *The use of food deficient in proteid.*—Most artificial foods are lacking also in nitrogenous matter. Children deprived of these two lacking elements are often large and fat, but are anaemic, flabby, and rachitic.

5. *The use of diet deficient in antiscorbutic elements.*—This is a point that is frequently overlooked. All condensed foods, farinaceous foods, and dry artifical foods are lacking in this regard, and should be supplemented by some fresh element.

6. *The prolonged use of artifically-digested foods.* These preparations do excellent service in the case of children just weaned, or with small power of digesting cow's milk. If they are continued for months the power of digestion becomes seriously impaired, nutrition falls off, and the child becomes anaemic and rachitic.—*Practitioner.—Arch. of Ped.*

The Infective Character of Cancer.

Nearly one-fourth of the available time of the section of bacteriology at the International Congress was occupied with the consideration of cancer as an infective disease.

Messrs. Ballance and Shattuck, although the results of their experiments had been entirely negative, were still of opinion that cancer is in all probability a micro-parasitic disease, a conclusion which was borne out by the facts relating to auto-inoculation, the character of the secondary infections, the latency sometimes observed in their manifestations, the cancerous cachexia, etc. They also alleged the increasing prevalence of the disease as a reason for regarding the disease as infective in character. Dr. Delepine and others discussed the relations which psosoperms bear to innocent and malignant tumors, Dr. Delepine coming to the con-

clusion that no dogmatic statement on the subject was as yet possible.

The question must therefore be considered as a completely open one, though it may be hoped that the investigations of the numerous observers and experimenters engaged upon it will eventually lead to a solution of the problem.—*Public Health.*

PROCEEDINGS OF THE SANITARY CONVENTION AT PORTLAND. (Continued.)

Certain Phases of Water Supply and Sewerage Systems.

By E. C. JORDON, C. E., President of the State Board of Health.

Our State of Maine is bountifully supplied with pure water, thoroughly suited for drinking purposes, a wonderful endowment if you will but stop to consider it; something beyond rubies in value, and to be envied by states and countries where no such sparkling elixir can be begged, borrowed or bought. Springs of world wide reputation bubble up among our hills and are to be found for the seeking. Indeed, some of marked renown in healing quality and as unequalled "table waters," have as a great ingredient "printer's ink," and many others unknown to fame might prove as efficacious were their merits exploited. Many a spring-bearing region is not even as yet pre-emptied and promises great things ahead.

In a section so blessed it would seem superfluous to descant upon "Water Supply," nor do I propose to speak at any length upon the subject.

In our larger communities, as for instance in cities of 2,000 inhabitants and upwards, the problem takes care of itself in a fairly satisfactory manner. Because ponds or springs are close at hand, the profit in furnishing such communities with water for fire protection and domestic use is motive enough to induce capital to undertake the work, and in this way the matter is taken up and accomplished.

The excellence and lavishness of our supply has hardly thus far made necessary the precaution that some states have taken of referring all proposed supplies to the State Board of Health. But the river supply of certain localities may yet give us anxiety, on account of the great quantity of water that can be furnished for a small amount of capital. And yet I have seen river water of great

purity rejected for pond water of much inferior quality. I have known lumber drivers to walk half a mile into the woods to a spring rather than drink from the river. This is often accounted for by the fact that a faint color tinges the water in many of our rivers during a part of the year. Now when this proceeds from natural causes it is not necessarily objectionable. It is rejected because there is an appeal to the eye which leads the mind to a theory of pollution. Supply from certain springs may be clear and sparkling in appearance and yet be full of death-bearing properties. These conditions, because of our lavish opportunities, have not greatly prevailed with us, but with the increased use of our streams in a diversified manufacturing interest, a warning should be given to those companies seeking the greatest return for the least expenditure; and communities should be educated and made to realize just what they may anticipate, lest they be too easily lured to a scheme that provides them with an abundance of water to protect their earthly tabernacles, but be thereby hurried to test the question of the immortality of their souls.

There have been many apparently sufficient reasons that have led to the theory of the self purification of rivers, but a careful investigation of the subject leads to this almost generally accepted conclusion, namely, the self purification of running streams, in the sense of removing dissolved organic matter, does not take place to any appreciable extent; hence there is a certain danger from river water that has received sewage and other contamination. Clearness and absence of color, that is, the purification as far as the eye can detect, comes about rapidly according as the physical features of the stream conduce to it. A river with a rough bottom, or with frequent changes in the velocity of the stream, will unload very rapprapidly in by-places and eddies the polluting material that is held in suspension. In our large rivers where this process is an extensive one, and where the dilution of dissolved organic matter is immense, such a source is tolerable, but there are many conditions that may raise a question, and when it comes to the smaller rivers with supplies taken from what are practically mill ponds, the conditions are altogether wrong. On the whole it will be the part of wisdom in this State, as it has proved elsewhere, to place the subject of the source of water supply, contemplated by the various corporations, under the surveillance and approval of the State Board of Health.

The value to small as well as large communities of a pure water supply system should lead to the execution of it in every village. The town pump is often the demon that destroys the home, and the farmer who locates his well "handy" to the kitchen and barn yard, may escape a little labor, but he frequently invites sickness and death into his household. There is nothing in which our farmers need enlightenment so much as in a knowledge of where to judiciously locate their wells. It is as important to cattle as to human beings. Investigation as to the capability of the earth in which our wells ordinarily exist to furnish a pure water supply, show that it depends not entirely upon the distance from the kitchen sink-spout and back yard, but upon the slope of the land; and again upon whether the polluting sink and barn water can be held in storage tanks and discharged all at once at periods of twenty-four hours, or at longer intervals. Experiments show that when this is done the water that finds its way down through the earth is largely purified, having left in the top layer of the soil its impurities which are rapidly destroyed by the influences that the oxygen of the air is able to maintain. This result does not take place except under the condition of intermittent application of the polluted water, and when such water is allowed to run constantly upon the soil, and so on down through the earth to the well, the destruction of bacteria does not take place, and mere distance does not preserve a well from becoming a dangerous source of water supply. These facts should be constantly brought home to your farming communities, and such methods may preserve to them certain existing wells, while future wells will be located with greater intelligence.

The subject of water supply is closely akin to sewage disposal and sewerage systems. Let us consider practically what the motives are that should lead a community, be it small or large, to do the best it can in these respects.

Our smaller towns enter upon an era of prosperity if they can induce capitalists to locate some industry in their midst, a shoe factory, a cotton mill, a paper mill, or something that will increase the number of people to be fed and clothed, the product of whose labor goes into the capital of the town. It is heralded as great and wonderful good fortune if a town can capture any enterprise that will lead to an increased population. But a healthy population will always find work to do; they will originate schemes for employment, and so it matters little how your numbers are in-

creased. Portland booms at the prospect of feeding a few more mouths incidental to the advent of the Allan Steamers this winter, and its board of trade and city government are struggling to have established in its midst a manufacturing interest on the market lot that shall bring a hundred or more people to Portland. and tremble lest Freeport shall capture the same and draw largely from our own population. Energy to use opportunities is necessary, but it is begotten by health, so that we should value and use all means by which population has been and can be acquired.

We can all realize that a penny saved is a penny earned, and how much more it is true that a life saved, a death prevented, with the saving of all the force and treasure expended in the attending sickness, is both a gain, and, practically, an increase of population. To illustrate from the official figures of Portland, as incomplete as they were in the earlier years of their collection, it would appear that if at the present time we knew no more about hygiene or sanitary laws than we did in the five years ending 1860, two hundred more people would have died in each of the five years ending 1890, and 178 more deaths would have occurred in 1890 under the same conditions that existed in the five years ending in 1870, and 142-74-68, with the same conditions as in 1875, 1880, and 1885 respectively. You will notice that I have made no comparisons for the five years ending with the war. Our registration of deaths in the earlier years was notoriously incomplete, whereas for the last five years "no guilty man escaped." Even with the incompleteness of the statistics of the earlier years, the slow growth of Portland and the absence of the conditions existing in large manufacturing populations, make the figures especially valuable as a safe indication of what can be expected from the practice of hygiene and sanitary laws. The progress of a death rate from 23.14 for five years ending in 1860 to 18.02 the five years ending in 1890 has been our salvation, and it is especially gratifying to note that during the last five years, four of which have been influenced by our local board of health, there has averaged each year sixty-eight deaths less than the average for the previous five years, which made a gain of only six deaths per year over its previous five years.

The effect of our pure water supply upon the death rate is somewhat obscured by the fact that it was introduced immediately after the war, and that our sewerage system was building at the same time; but who can doubt the enormous factors these two have

been in bringing about the change. What part has the reform instituted by our local board of health played in the above? The four years ending with 1890 show some startling and gratifying results.

It is a very remarkable fact that in two of those years (and I believe it would have been three except for la grippe in 1889) and notwithstanding our population has increased from twenty-six to forty thousand, the total number of deaths in 1888 and 1890 was less than in any year since 1860, except that of 1878 when there were fewer deaths by twenty, but the death rate was much higher, being 17.66 as against 15.63 in 1890. I doubt if better results can be shown in any city in this country.

I have not by any means cited the above figures as a model of accomplishment to be contented with, but rather to point out what can surely be anticipated by all our communities pursuing a proper course.

This community of Portland would be bankrupt in a few years if it were to increase its death rate 200 per year, i. e., making it what it was in 1860, and it is not at all impossible that it can gain great prosperity by a further reduction of 200. An eminent English sanitarian states that it is a mere matter of dollars and cents whether a death rate of ten or twenty exists; that it is simply a matter of good houses, sewers, and water supply, and the enforcement of sanitary laws.

Notwithstanding the progress we have made I am faint hearted in showing our city to strangers, because of the disgrace we are in at leaving unsolved the problem of an improvement in our Back Cove and Mill Pond Area, but "that's another story," as Kipling has it.

I have tried to show you that selfish as well as broad motives demand water supply and sewerage systems. An intelligently planned system of sewerage is now very largely made up of small pipes which unskilled labor can rapidly lay, and which can be purchased at low cost.

The materials that enters into their construction have become so cheap that most communities may enjoy them without too great a burden, even if unmindful of the great profit that always accrues to such progressive action.

Dr. Meserve:—There is one interesting element brought out in the paper, and that is the diminished number of cases of typhoid fever

since the introduction of Sebago water. One physician told me that he had only about one case now where he had fourteen before the advent of Sebago water. Our investigation during last year and this year in relation to the history of typhoid cases occurring in Portland shows that, almost invariably, the patients had been out of town and had been drinking water from wells away from our own city.

Another point brought out is that we cannot tell by taste or appearance whether the water is fit for use or not. I remember a circumstance which occurred several years ago when the Portland & Rochester Railroad was being built. An excavation was being made down on the dump, and a spring was opened; that is, the water bubbled up rapidly through the sand, and the men thought they had discovered a spring, and tasting it found it was apparently pure water. It was used by the workmen several days, and as they got along further up they found that the source of their spring was an obstructed sewer which discharged all the sewerage from Canton and Brattle streets. It had become apparently pure, in looks at least, by passing through a few feet of sand.

Another circumstance occurred at Sebago lake this fall. We found eight or ten cases of typhoid fever, and the people who had it said they all drank from one spring which they described to us as being situated a little way from the border of the lake. We went out and found a little ampitheatre of ground containing three or four acres, a cultivated field planted to corn, and in the middle we found a couple of excavations had been made and pieces of cement pipe put in. One of these was the famous spring from which the men had drank. In looking at the spring it seemed to me to be stagnant water which had soaked in from the surrounding field. On thrusting a stick down I found a foot and a half or two feet of water, and the gas bubbles came up so thickly that we could easily have collected two or three quarts of gas. There is another fact in relation to the water from wells which may be impure, and that is that persons who live by and drink out of the well may become so habituated to it that it does not produce disease in them whereas a stranger may contract a contagious disease from it. I have just seen a case of that kind this fall. In a little neighborhood in an adjoining town not far away, there were several cases of typhoid fever of a very severe character. During this summer a family from this town were boarding in that vicinity, and they

came home with a little girl sick with typhoid fever who undoubtedly took it from a well that people are using water from, apparently without detriment.

Dr. Gerrish:—I rise mainly to express the satisfaction I had in the paper presented in so picturesque a way that it must attract attention. It is a cause of congratulation that the efforts of sanitarians have resulted as successfully as they have, but it is very humiliating to us to have to think that the arguments which we present with reference to saving life and preventing suffering make very little impression upon the people generally and upon communities, as compared with the impression that can be made by a purely commercial argument which does not appeal to the love of life or the desire to preserve life. I do not know that I can speak by the card exactly, and I do not know whether or not there is any community in this State that has taken pains to provide itself with a good water supply because it would have a favorable effect on health. I doubt if there is any such. I think the water supply has been put into most towns where it exists on account of the necessity of guarding against fire which destroys not human life as a rule, but inflammable property. I think I am probably correct in saying that there is not a town whose water supply was put in from purely sanitary motives, but only because they wanted to preserve their property. I would not argue from this that we should desist in any way from pushing the sanitary argument, but I think we should all take a hint from this and give as much prominence as the truth will allow, to the commercial side of the thing, and to present continually until people believe it the fact that human life is actually worth dollars. It would not have been difficult to make all the people south of Mason and Dixon's line believe that previous to 1861; there human life was known to possess a money value because it was bought and sold. A well set up negro boy of twenty-one, without any skill whatever, would bring $1000 in the market any day, and a picaninny a year old would bring $100 if it was healthy. That is one of the disadvantages that has come from the abolition of slavery—that people do not think as much as they used to about the money value of human life. I think all sanitarians ought to insist on that and present very prominently indeed the commercial aspect of the case which Mr. Jordan has so picturesquely presented to us this evening.

THE

SANITARY INSPECTOR.

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Notes, Sanitary and Otherwise.

Birth, marriage and death certificates will be forwarded to anybody whose business it is to use them and whose supply is exhausted. Kindly notify Registrar of Vital Statistics, Augusta.

The first requisites of a healthy home are a dry spot of ground, a dry cellar, and a dry foundation under it. These should be secured by deep subsoil drainage outside the foundation walls with unglazed porous tiles, in the way described in a former number of this journal. They cannot be secured with cement or concrete, nor even with asphalt after the cellar has been built in the usual unintelligent manner.

After planning protection against dampness from below, see that it does not threaten from above. Trees should not overhang the house nor stand too near it on the south, east, and west sides. On these sides there should be an open area of sunshine in the immediate vicinity of the house, not of shade.

If possible, plan the family sleeping rooms to come on the east side so that the morning sunshine may stream into them; not as a concession to sentiment, but to enable the housewife to air and *sun* the bedding thoroughly in the morning hours before the beds are made. This is an important item in the hygiene of the sleeping room.

And right here it may be said that the morning airing of sleeping rooms as practised by some persons—raising the windows only a few inches, or opening a swinging pane—is a mere farce on window ventilation. The weather permitting, the sashes should be opened wide. The mechanical action of the wind is needed to flush out the old air and its impurities and to fill the room with that which is pure and healthful.

Milk Supply in Copenhagen.

The Copenhagen Milk Supply Company owes its origin to what may be termed an accident. About twelve years ago Mr. G. Busck of Copenhagen, founder of the Scandinavian Preserved Butter Company, hearing that one of his work people was much distressed because he did not procure in town what he had been accustomed to get in the country—namely, good wholesome milk for his children—that, in fact, the said workman had been refused milk at a distillery where cows were kept on the ground that "he didn't buy spirits there," Mr. Busck thought such a state of things ought not to be, and set about trying to remedy it at once. He saw that in Copenhagen then, (as in so many other places now) one had to be satisfied with milk for which one had not the slightest guarantee that it was not adulterated, or the produce of cows unhealthy or badly fed, and that, as in the case above mentioned, there was sometimes considerable difficulty in obtaining it at all. Knowing it to be a most valuable food for the community at large, and an indispensable one for children, he speedily discovered that, viewed either from a philanthropic or a commercial point of view, it was well worth while endeavoring to supply the town with it. Much might be written about the difficulties which he had to encounter in the working out of his idea, but it is beyond our purpose to do so here.

He soon enlisted the sympathy of one of the highest medical authorities in Denmark, the late Professor Panum (who, it may be recollected, presided at the great medical congress held at Copenhagen in 1884); Herr Bille, some time ago Danish minister at Washington; Dr. Borch, writer of the well known article, and afterward Dr. Engelsted, and Mr. H. B. Halkier, solicitor (now one of the directors).

Three of these gentlemen agreed to form an independent committee, working without remuneration, and with no monetary interest in the concern. A company with a capital of about 600 pounds was formed, and they began business on a very small scale, in a place opposite the Copenhagen Industrial Exhibition. Shortly after they moved into the Industrial buildings themselves; and finally they went to their present headquarters at Frederiksberg, on the outskirts of the city. Here premises which cost 7,000 pounds were erected; and these last year, were greatly enlarged at a further outlay of 2,000 pounds.

The following extracts (with additions which bring down the statistics to the present time) are taken from our translation of what Dr. Borch wrote about the company in 1887:

In my article published in the Medical Weekly Review for March, 1878, on the projected Copenhagen Milk Supply Company, I endeavored to place before the readers of that journal the programme and the object which it had in view. This company, which commenced working in the month of April, 1878, has now existed for ten years, and I think my readers will follow with interest the success which has attended it, and an account of the means by which this success has been attained. The object set before it was to supply pure and unadulterated milk to the inhabitants of the city of Copenhagen, and especially to the infant population.

It will, perhaps, be remembered that, on the establishment of the company, it was resolved that the undertaking was not to be of a purely mercantile character.

It was therefore decided that any profits exceeding the five per cent payable to the shareholders should go toward reducing the price of milk and improving the business generally. It was also agreed that the members of the committee of control should have no monetary interest in the concern.

The nature of the prospectus and the promises contained therein appealed to the public, and soon secured its confidence and support, which was fully justified by the efficient manner in which the committee of control carried on the daily analysis of the milk.

These analyses were made in the laboratory of the University, where they are still carried on, according to the method prescribed by the late Professor Panum. On the death of Professor Panum, Dr. Engelsted was appointed his successor in the committee.

Here Dr. Borch mentions the amount of work involved in making the analyses, which is now much greater, and recently in one month, that of October, 1889, necessitated the examination of milk and cream from fifty farms with a stock of 4,300 cows.

This entailed analyses of the weight and density of sweet milk, analyses of the density of skim milk, and analyses of the density of two qualities of cream—2,088 analyses in all.

Every evening samples are taken of the milk and cream sent in by each farmer who has contracted for the supply, and these samples are examined next morning in the company's own dairy, which is situated close to the railway station of Frederiksburg (a suburb of Copenhagen.)

By these means, should any fault be found with the milk, it may at once be rejected. Then, again, before the milk is sent out for delivery in the morning, an average sample is taken of each quality of milk and cream, and these are sent to the University to Professor Bohr, lecturer on chemistry, who publishes monthly the results of his daily analyses, giving the highest, lowest, and average figures.

When taking the samples of milk on its arrival from the country, its temperature is also noted. The contractors are bound by the rules of the company to cool the milk, immediately after milking, to 4° Reamur, (about 40° Fahrenheit), so that even in the hottest season it can be transported to the city without its temperature rising more than a few degrees. If, however, on its arrival it is found that its temperature has risen above 8° Reamur (50° Fahrenheit), the milk is rejected by the company, and disposed of at the expense of the contractor.

One of the most important and at the same time most difficult tasks is to secure wholesome milk, for the above-mentioned analysis can only guarantee the chemical properties of the milk, but not its physical qualities, which, considered from a hygenic point of view, are of the greatest importance. In order, however, to ensure the greatest security possible in this respect, the following measures have been adopted:

The only milk accepted is that which is supplied from farms which have a really superior and healthy stock of cattle, and besides this, the company demand from farmers and managers a moral guarantee that its rules respecting the feeding and treatment of the cows shall be strictly attended to.

The price paid for the milk is the very highest obtainable, higher than the parties contracting can get for it anywhere else; thus the contractor would suffer a pecuniary loss were his contract to be cancelled, and he has the highest inducement to comply with the regulations of the company.

Here Dr. Borch mentions that *the cows supplying children's milk* are examined by a competent staff of veterinary surgeons once a fortnight; now *all the cows* are so examined. He then continues:

The veterinary surgeon must fill up a form, in which he gives a report on the condition of the fodder and on the state of cleanliness in which both cows and cow houses are kept.

Any cases of lung complaints, or of other diseases, real or suspected, he must report, specifying more particularly which of the animals supply milk for general, and which for special uses. He is

also obliged to state how much milk is yielded by the cows which are ill and separated from the others and the use made of it.

As a further precaution, an inspector is regularly sent out to examine the management of the dairy farms. He must fill up a form, reporting on the condition of the cows and the quality of the fodder; he must also see that the rules laid down by the company are observed with regard to feeding the animals; also that cleanliness is exercised while milking.

He must examine the cooling apparatus; report if it is in order; if there is a sufficient stock of ice; and how it is stored. Besides all this, an experienced dairymaid is sent out to superintend the milking of the cows. Her attention is specially directed toward securing cleanliness during the milking; also to the cooling of the new milk. In order to keep the milk as cool as possible after its arrival at the company's dairy, the milk cans are placed in large tanks filled with ice, but before this is done the milk undergoes a thorough process of purification.

At first only the milk intended for children was subject to the system of filtration, but since it has been proved to be so advantageous, all the milk and cream sold by the company are now filtered. While the milk is in the dairy, every care is taken to preserve its purity.

Through the partition wall dividing the filtering apartment the milk is conveyed by means of pipes into another hall, where it is bottled, the workmen employed on the process of bottling being supplied with clean white blouses, caps, and aprons.

We thus see that the company not only takes the greatest possible pains to procure good and wholesome milk from the country, but also uses every means in its power, and spares no expense, to keep it good in all its stages on its long way from producer to consumer.

Nor do these efforts to attain the object in view end here. Experience, both at home and abroad, has taught us that milk has proved a dangerous and ready medium in conveying infectious diseases, especially diphtheria and typhoid fever, and considering the great number of farms from which the milk comes, and the consequently increased number of possible sources of infection, the following precautions are taken to avert danger:

Every contractor is pledged to report immediately on any case of infectious disease appearing either upon his farm or among his work people. His attention is especially directed to the women who milk, no one in whose home an infectious disease has broken out being allowed to assist in dairy work.

To ensure the contractor against loss in cases of this kind, the company is bound to purchase the suspected milk at the usual price, but only if intimation as regards the outbreak of the disease has been made at once.

This milk is not resold, nor does it ever come into contact with the milk which the company supplies to its customers.

The same strict supervision is exercised over the work people connected with the company's own dairy and establishment at Frederiksburg. Dr. Schou and Dr. Bilsted, who are engaged by the com-

pany to watch over the health of its employes are authorized to suspend from work any person in whose family an infectious disease has appeared. These people, though suspended from their work, are paid their full wages, and have thus no temptation to conceal any case of illness from the doctor.

While we are writing, three persons, acting under the doctor's orders, are in this way absent from their work. To show the care that is taken to prevent the spread of infection, it may be mentioned that last summer, when a case of typhoid fever broke out in the family of one of the functionaries living on the company's premises, to avoid the possibilities of any germs of infection mixing with the milk in any way, a two-story cottage was hired, to one story of which the infected family was at once removed, while the other story was kept in readiness to receive any fresh case which might appear. Fortunately, however, it was not required.

A specialty of the Copenhagen Milk Supply Company is the milk for children; its value is generally admitted by the inhabitants of the city, as shown by its still increasing sale. Last year (1889) it went up to 162,000 gallons. Special attention is paid to the winter fodder of cows yielding this supply. In summer all the cows are fed alike, their fodder must consist of grass and clover only; other kinds of food, such as vetches, are not allowed, nor on any account are cows to be kept in the house during summer. As soon as a contractor, from want of pasture, is obliged to feed his stock indoors, his contract with the company is cancelled until he can again put his cows on grass. During the winter the cows producing the children's milk must be fed only with hay, straw, oats, barley, wheaten bran, and a small quantity of carrots. It has therefore been necessary to pay a higher price to the contractors for this quality of milk, but this extra expenditure, together with the cost of the careful bottling, is not covered by the slightly increased price paid for it by the public. The profit made by the company on this milk is thus less than that made on the ordinary sweet milk. But, in the interest of the community, this important kind of milk is sold as cheap as possible. Abroad it costs twice as much as it does here.

In this paper I hope I have succeeded in showing to my readers that the company has fully carried out the programme published by it ten years ago, and at the same time I hope I have made plain that the Copenhagen Milk Supply Company has become a powerful agency in promoting the health of the city.

Besides the direct advantage thereby obtained, there is an indirect advantage which is even greater. By teaching the inhabitants of the city what is really good and wholesome milk the whole milk trade has been roused to the necessity of supplying it, and the standard has been raised.

Since this was written, in 1887, the financial results have steadily improved, and at present the concern is a perfectly sound mercantile enterprise, yielding a good return for the money invested in it.

This is due not only to the increased annual turnover, but greatly

to the fact that the large sums expended at the commencement upon experience are now no longer necessary. Much money had to be spent before many of the simplest details arrived at their present state of perfection, but now the experience so dearly bought by the asssociation is open to all the world, and future milk supply companies need not pay for the same a second time.

The shareholders' capital is £6,000, and the total sum invested about £12,000.—*U. S. Consular Report.*

Arsenic in Papers and Other Articles.

The Massachusetts Legislature of 1891 authorized the State Board of Health to "make such investigations and inquiries as they deem necessary as to the existence of arsenic in any paper, fabric, or other article offered for sale or exchange." Dr. Wm. B. Hills was appointed by the Board to make the investigation. The following is an abstract of his report.

"In all, 1,018 samples have been collected in twenty cities and towns in different sections of the State. Of these, 629, or 61.8 per cent, were non-arsenical, 389, 38.2 per cent, contained arsenic in appreciable quantities.

"The nature of the samples together with the results of the analyses are shown in the following table:

Nature of Samples.	Non-arsenical.	Arsenical.	Total.
Wall papers	44	48	92
Other papers	79	41	120
Dress goods	282	174	456
Upholsteries, etc.	199	101	300
Candles	18	-	18
Pigments	7	25	32
Total	629	389	1,018

"The small number of wall papers is explained by the fact that the writer was able, as will appear later, to utilize a large number of analyses of such papers made in his private practice.

"The following conclusions are presented as the results of this inquiry so far as it relates to wall papers:

"First. Between sixty and seventy per cent. of the papers sold in the State are free from arsenic, while about six per cent. contain more than one-twentieth of a grain of arsenic (arsenious oxide) per square yard. Of the latter, about one-half, or three per cent. of the whole number, contained more than one-tenth of a grain per square yard.

"Second. The percentage of papers containing more than one-tenth of a grain of arsenic per square yard has not diminished during the past three years. The evidence of this is found in the table showing the results of the analyses made in 1889, 1890, and 1891.

"Third. It is practicable to manufacture papers which shall contain less than one-twentieth to one tenth grain of arsenic per square yard. This is evident from the fact that ninety per cent., approximately, of the papers made to-day and sent into the State contain less than this quantity of arsenic.

"Fourth. Arsenic is not essential to the production of the colors; since all the colors which have in years past been highly arsenical are now produced without the use of arsenic.

"Fifth. The claim of the paper manufacturers that the arsenic present in their products is an unavoidable impurity is not borne out by the facts. About two per cent. of the papers examined contained quantities of arsenic ranging from one-third of a grain to one grain and over per square yard. Such quantities cannot be attributed to unavoidable impurities. It is undoubtedly true that that the manufacturers do not knowingly use arsenic. They do use pigments which contain unnecessary quantities of arsenic, and the use of such pigments can easily be avoided.

"*Other Papers.*—Of these, the most important are the so-called 'glazed and plated' papers, which may be found in nearly all the kindergarten schools, where they are placed in the hands of small children who fashion them into ornamental articles of various kinds. Rolls of these papers, put up expressly for the use of children, may be bought in nearly all the toy shops. They are also used for covering pasteboard boxes, as covers for pamphlets, for wrapping confectionery and various fancy articles, for lamp shades, and for decorative purposes.

"Many of these papers, as sold to-day, are highly arsenical, notwithstanding the fact that their dangerous character has been repeatedly pointed out. Eighty-eight samples, comprising all the colors, have been examined. Of these, sixty-one were non-arsenical, nineteen contained less than one-tenth of a grain of arsenic per

square yard, while eight contained more than one-half grain per square yard. The latter included one blue, one red, one orange, and five arsenical-green (Paris green) papers. Six rolls of these papers were purchased in as many different toy-shops, and all, with a single exception, contained a sheet of the characteristic arsenical-green paper. These green papers are unquestionably the most dangerous arsenical papers made. A number of analyses are given in the report of Dr. Wood in the Massachusetts State Board of Health report for 1885, from which it appears that they may contain from three to eight grains of arsenious oxide per square foot. A decided improvement is noticed in other colors, especially the reds. This is probably attributable to the general improvement which has been made in colors in order to meet the requirements of the wall-paper manufacturers. In 1881 the writer examined a large number of these papers, including sixteen reds of various shades. Of the latter eleven were very arsenical, while but one was entirely free from arsenic; while of nine red papers examined for this investigation, five were non-arsenical; one only containing more than one-tenth of a grain per square yard.

"Paris green was formerly used a great deal as a pigment for tickets, price cards, and other articles made of card-board. It has now been replaced to a considerable extent by other less injurious pigments, but its use has not been entirely done away with. Articles of this description, colored with Paris green, are frequently brought to the chemist's notice.

"*Textile Fabrics.*—Compounds of arsenic are used quite extensively in the manufacture of coloring matters, and in some of the processes for fixing colors upon fabrics.

RESULTS OF ANALYSES OF FABRICS.

Nature of Samples.	Non-arsenical.	Under one-twentieth grain per square yard.	One twentieth to one-tenth grain per square yard.	Above one-tenth grain per square yard.	Total.
House furnishings	199	43	8	50	300
Prints and ginghams	221	87	19	66	393
Woolens	33	–	–	–	33
Silks	28	2	–	–	30
Total	481	132	27	116	756

"Approximately sixty per cent of the cotton fabrics were non-arsenical, while about eighteen per cent contained more than one-tenth of a grain of arsenic per square yard; a very large proportion of the latter containing much more than this amount. The quantity of arsenic was estimated in twenty samples taken at random from the most arsenical ones, and was found to range between .8 grain and 3.4 grains per square yard.

"These results are in close correspondence with those obtained by Mr. A. W. Stokes ("Therapeutic Gazette,") January, 1889, page 24, from the "London Chemical News,") who examined 100 samples of Indian muslins and cretonnes, and found that twenty-three per cent. contained arsenic in appreciable quantities, the highest percentage being 2.1 grains of arsenious oxide per square yard. The most dangerous material met with was arsenical green (Paris green) tarlatan, which is still sold in the retail stores, notwithstanding the fact that attention has repeatedly been called to its poisonous character. The pigment is applied to this material very loosely, and is readily detached by friction or even by slight motion. Another very arsenical material, for which there appears to be a considerable demand, is a red striped ticking used for mattresses. Of six samples of this, obtained from different furniture dealers, five proved to contain a very large percentage of arsenic. Here, as in the case of papers, it is apparent that it is practicable to manufacture fabrics, which shall be free from arsenic; further, that arsenic is not essential, since there was found for nearly every arsenical sample, a duplicate in color which was non-arsenical, and which stood washing equally well with the arsenical pattern.

"A few experiments have been made to determine the effect of washing upon the amount of arsenic. It was found in all the experiments that an appreciable amount of arsenic is removed by a single washing; usually about one-half of all the arsenic present. Repeated washings failed, in three experiments in which its effects were investigated, to remove all the arsenic.

"But little attention has been given to woolens and silks. The results of the few analyses made are in close accord with the previous experience of the writer and other chemists. Occasionally a very arsenical all-wool material is met with, but the percentage of such appears to be very small. Mixed cotten and woolen goods are however as liable to contain arsenic as any cotton fabric. Some of the most arsenical samples met with in this investigation were of this description. The writer has never detected a dangerous amount of arsenic in a pure silk. The percentage of arsenical silks appears to be even smaller than that of arsenical woolens."

"*Miscellaneous*:—The colors used in the interior decorating of houses have been examined with reference to the presence of arsenic, since it appears probable that these, next to papers and fabrics, are the most important sources of chronic arsenical poisoning.

The following were found to contain arsenic in considerable quantity:—Orange, chrome yellow, two samples; dark ochre, two samples; venetian red, four samples; raw umber, three samples; sienna,

two samples; brown unber, two samples. The following were non-arsenical:—Chrome green, three samples; emerald green, two samples; whiting, one sample; ultra-marine bule, two samples; lamp black, two samples. The remaining colors examined, namely, quaker green, lemon chrome yellow, cobalt blue, and light ochre, contained a small percentage of arsenic.

"It is perhaps doubtful if these arsenical pigments, when put on with oil, are likely to cause injury. With water colors, however, the conditions correspond very closely to those met with in the case of wall-papers. These colors are laid on the wall comparatively loose; particles are easily detached, fall to the floor, and may afterward become diffused through the air in the form of a fine dust.

"No accurate determination of the amount of arsenic in any of these pigments has been made, for a knowledge of the percentage of arsenic is of no particular value, unless the weight of the pigment used in the preparation of the various tints is also known. It is intended, if possible, to secure the co-operation of some of the decorators in the further investigation of this subject.

"So far as could be ascertained Paris green is not used at the present time in the interior decorating of houses. All the green colors which were tested were either chrome greens, or mixtures of blue and yellow colors.

"Several boxes of water colors, such as are used by children, were examined with especial reference to the presence of Paris green, but with a negative result.

"A similar negative result attended the examination of 18 toy candles which were obtained from different localities. The coloring matter of the green candles was, in all those examined, a mixture of a blue and yellow pigment.

"So far as has been observed, Paris green is not now used as a pigment for children's toys except in the form of the green papers, to which attention has been called, and green tarlatan. Considering the wide publicity which has been given to the whole subject of arsenical poisoning as it may occur in our homes, it is a matter of surprise that this very dangerous arsenical pigment is still used at all in the manufacture of materials which are especially liable to fall into the hands of small children, who are thus subjected to the risk of serious if not fatal poisoning."

Answers.

To G. D.—The law specifies that every case of scarlet fever, diphtheria, or small-pox, shall be promptly reported to the State Board of Health. The Board, however, insists upon only a prompt report of the first case in an outbreak, epidemic, or group of cases, and thereafter weekly in the same outbreak, epidemic, or group of cases, a report of the number of cases, as provided for on Form 7. We like to have you report typhoid fever in the same way.

To M. E. B.—It is very difficult to disinfect books that have become infected. No method has yet been proprosed for effective disinfection that is not destructive of the books. The best and cheapest way for the town in the long run is to burn the books. By this I do not mean that, when a case or a few cases of scarlet fever have been introduced in'o a school-room, to burn all the books, but only the few that have been used by infected pupils.

The outsides of the books could be disinfected by putting them into a tight box, such as a large dry goods box, and fumigating them thoroughly with sulphur, taking precautions against burning them at the same time. This would not, however, disinfect the leaves inside the covers.

To S. A. V.—You can save a great deal of work in the way of disinfection in connection with the case of scarlet fever by making the family understand that it is very necessary to guard against spreading the infection of infectious dust, as we might term it, from the sick room to other rooms and parts of the dwelling. To assure this, it is necessary that the nurses or attendants upon the sick do not themselves run all over the house carrying the infection in their clothing, and, in the second place, it is necessary that not one piece of infected clothing from the patient himself, or from the bed, or any articles from the room that are likely to be infected shall be carried in a dry or undisinfected condition from the infected room. If you can give the people an intelligent idea of care in this direction, you will have practically narrowed down your field of operations to the sick room only, when you come to disinfect the house.

If you cannot succeed in thus narrowing the infected area within doors, you will have to search out infected articles that have been removed and have them and their places of lodgment disinfected.

As regards the disinfecting process itself, I would advise the keeping of a tub partly full of a disinfecting solution in, or close by, the sick room, into which all articles of infected clothing shall be immersed until they can be put on to the kitchen stove in the ordinary tin wash boiler and boiled at least half an hour. If it is not convenient to keep the tub of disinfectant standing in the room, the clothing should be wrapped in a wet sheet before it is carried out of the sick room.

The boiling process is about all you will need until the final recovery of the last patient; then, after the last patient is completely through with the process of peeling, or desquamation the room should be disinfected in accordance with the directions given in the scarlet fever circular.

THE

SANITARY INSPECTOR.

VOL. V., NO. 12. JUNE, 1892. 25 CENTS A YEAR.

Notes, Sanitary and Otherwise.

Every member of a local board of health in a town in which the municipal officers fail to make the appointments as the law requires, should remember that his term of office terminates only with the appointment of his successor.

The reports received in this office so far this season indicate a prevalence of infectious diseases that is below the average. There have been very few outbreaks of diphtheria, and but a small prevalence of scarlet fever in a mild form.

On account of the large quantity of extra work falling to this office in putting into operation the new vital statistics law, the annual report is unavoidably later than usual. The printer is now well along with it, however, and it will be sent out as soon as possible.

Small-pox has been appearing with unwonted frequency in many states of late. An attitude of expectancy in relation to this disease is always in order with a local board of health of a town which neglects vaccination.

In one of these outbreaks at Pomeroy, Ohio, small-pox masqueraded as chicken-pox more than a month, and the wonder is that the infection found less than sixty persons susceptible to its influence.

We have just received from Dr. Vaux, Superintendent of the State Board of Health of North Dakota, a notification that there are numerous cases of small-pox in some of the towns in Manitoba, and that his State has proclaimed absolute quarantine against that Province. The origin of the outbreaks is said to be Chinese immigration.

The State of New York has passed a law requiring that all school buildings hereafter erected shall be entirely fire-proof; and architects of known ability and standing only, are permitted to be employed.

Another series of investigations for the determination of the action of chemical disinfectants on the infection of the sputa of consumptive patients, is that of Spengler of Freiburg. The disinfectants tested by him were, carbolic acid, creolin, aseptol, and lysol, in from 1 to 10 per cent. solutions. The expectorated matter to be disinfected was exposed to the action of the disinfectants from three to thirty minutes in one series of tests, and from five to twenty-four hours in others. None of these agents were effective except lysol in 10 per cent. solution after it had acted twelve hours at least.

Typhoid fever is a preventable dis ase, but it will be prevented only by putting into practice those few precautions that are well-known to preventive medicine. As regards yourself the chief is: "Do not drink suspicious water; if you must, boil it first" As regards others: "Thoroughly disinfect all discharges from typhoid fever patients." Further instruction may be found in "Circular No. 46," which, at this season of the year, should be in the hands of every family.

Remember, too, this year, the lesson taught by the outbreak of typhoid fever at Plymouth, Pa ,—1153 cases and 114 deaths, as the result of permitting the discharges from one typhoid patient to wash into the stream which was the source of the public water supply.

An outrageous species of nuisance imposed on the public very often is the deposition of the carcases of animals in improper places without burial. The person who commits a nuisanc e of this kind should be assigned the sweet task of removing it and walked straight over the road to the doing of it.

There is neither sense nor safety in a sedentary man starting in on a vacation with prolonged tramping in the woods, or among the mountains, or with severe rowing. This, however, is just the kind of outing needed by him if he can approach it with some preliminary muscular training.

In answer to the enquiries sent out every year on the annual report blank, "What methods can you suggest for improving the sanitary condition of your town?" the secretary of one local board replies, "The distribution of health circulars. We would distribute all we can get." As a general reply it may be said that local boards of health have been urged repeatedly to make a general distribution of the circulars published by the State Board, and that as many copies will be gladly sent from this office as can be distributed without waste, whether by the hundred or by the thousand.

In 1878-79, Dr. Enko of St. Petersburg observed eighty cases of Rötheln with an eruption resembling that of scarlet fever, in a girls' school; and in 1885 an outbreak of 170 cases of the same disease with a measles-like rash. Desquamation was not present in either outbreak. In the epidemic of 1885 swelling of the lymphatic glands and serious anæmia occurred after the fading of the eruption.—*Zeit. für Schulges. II, 475.*

The supple, graceful foot makes healthful exercise and graceful activity a possibility. The undeveloped or unheal hy foot is a cause of bodily and mental disease. Children should not wear our box shoes, but a flexible, loose, moccasin-like slipper with no heel. The shoe of young people should have added a stiff heel and a stiff half-sole, nothing more. The constriction of the ankle and instep should be avoided, because it results in interference with the nutrition of the foot.—Editorial in *Jr. Am. Med. Assoc.*

Last year, Fall River, Mass., turned over a good new sanitary leaf by appointing an inspector of plumbing.

As showing that the people see the advantages that are coming from our records of births, marriages and deaths, it may be mentioned that several town clerks have written that persons have applied to them to have births, marriages and deaths that have occurred in years past put on the permanent local records. This cannot properly be done. It is a pity that these important records were not begun long ago.

At the meeting of the American Medical Association this year, Dr. Lawrence F. Flick of Philadelphia, read a paper on "Voluntary Association for the Prevention of Tuberculosis." Though the medical profession now generally accepts the fact that tuberculosis

is a contagious disease the discovery is yet too new to expect much preventive work in this direction by state boards of health or other public authorities. In Philadelphia there has recently been formed the "Pennsylvania Society for the Prevention of Tuberculosis, the purposes of which are to educate the people in the methods of prevention and to furnish assistance where the afflicted families are too poor to pay the necessary expenses. Dr. Flick was satisfied that 2,000 lives had already been saved in Philadelphia by the efforts already made without an organization.

The Cholera Prospect.

For some months the cholera prospect has not been reassuring, and, at the present writing, the danger of the importation of the disease into this country the present season is becoming more imminent. The old story of the march of cholera through Russia into other European countries, of equivocation of Muscovite officials, instead of frank avowal and neighborly warnings, and of red tapery, seems to be working itself out again. Meanwhile local boards of health, municipal governments, and citizens generally should raise an effective barrier against the implantation of the infection upon our soil by municipal and private cleanliness.

Though disaster has in the past come to some of our cities from this pest, Maine has many times been fortunate; but we are now more closely connected with the rest of the world than ever before, and where travel and traffic go, cholera is wont to go, if it is permitted. There are places in this State where typhoid fever has been more prevalent than it should have been. Cholera is closely related to typhoid fever, and the conditions that favor the prevalence of the one disease, favor the spread of the other. For the citizens or the municipality to guard against either disease, the first desideratum is a water supply above suspicion; the next is an approved system of excreta-disposal. Let every town do creditable work, which, if cholera comes, will be fortunate; if it does not reach us, will be a blessing as a bar to typhoid fever and some other diseases that are greater scourges than cholera.

On Building School-Houses.

[Circular No. 65 issued by Maine State Board of Health.]

In General.—School-houses should be built in places that are quiet and free from dangers of various kinds, and on ground that is either naturally dry or made so by subsoil drainage.

Basements and foundations should be carefully built with a view to excluding the evil influences of soil moisture.

The play-grounds should be ample, and a portion of them at least, should have a sunny exposure and be protected from the cold westerly and northerly winds by the school building or otherwise.

The best general arrangement of the plan of the building is that in which the school-rooms are all placed on one side of the building with corridors, halls, stairways, and wardrobes on the other. Built in the old way with rooms all around, school-houses have dark central halls, staircases, and, for some of the sch ol-rooms, a favorable lighting cannot be had.

School-Rooms.—The best shape for school-rooms is that of an oblong, the width being to the length about as three to four. The teacher's platform should be placed at one end.

The ceiling should be at least twelve feet high, and if the room is of considerable width, especially if unilateral lighting is employed, it may be necessary to have the ceiling somewhat higher.

In rooms for study it is desirable for each pupil to have 20 square feet of floor space, and 240 cubic feet of air space; for example, a room for thirty-five pupils should have 700 square feet of floor surface inclusive of aisles, and should include within its walls an aggregate of 8400 cubic feet of air space. A room 30 feet long, 23 feet 4 inches wide, and 12 feet high will fill these requirements.

Lighting.—The glass surface of the windows should equal at least one-fifth of the floor space of the room.

The principal light should come from the scholars' left; windows may also be placed at the rear of the scholars when desired. Windows may be placed at the right for ventilating purposes or for admitting direct sunshine while the scholars are not engaged in study.

The principal light of the school-room is preferably taken from the N. E., E. or N., the preference being in the order in which the points of the compass are named. Direct S., S. W. or W. windows for the principal light are to be avoided as far as possible.

The window-sills should be three and one-half or four feet from the floor.

The windows should reach as near the ceiling as the construction of the building will permit, for the higher the windows reach, the deeper the light penetrates into the room, and the more satisfactorily the desks farthest from the left hand windows are lighted.

When possible, the school-room wall opposite the principal light

should be reserved for the blackboard. Blackboards should not be placed between the windows or near them.

Above the blackboard and opposite the principal windows small windows may be placed for ventilating purposes and transoms over doors may be used for the same purpose.

It is advisable in all school-buildings to have double windows. The increased cost of construction will be paid by them over and over again in the saving of fuel, and they facilitate very much that window ventilation which must be the main reliance in mild weather. Both sets of sashes should be hung with weights and pulleys.

Heating and Ventilation.—The warming of school-rooms may be accomplished by using stoves, furnaces, or steam-heating.

Direct radiation from stoves or steam coils should never be used.

It is practicable to supply 2,000 cubic feet of air per hour for each scholar and the plans for ventilation should admit of furnishing this amount at least ordinarily.

Stoves should invariably be jacketed and connected with fresh-air inlets for the purpose of supplying fresh air to the room.

Furnaces should be of a kind capable of supplying 2,000 cubic feet of air for each scholar hourly, and a capacious fresh-air inlet should never be omitted.

When steam heating is used the coils should be placed in boxes or fresh-air rooms in the basement or elsewhere for the purpose of warming the air before it enters the school-room.

School buildings should be so planned as to permit the ducts for fresh-air and for foul air to be as direct and as free from horizontal extension as possible.

Inlets and outlets should be of ample size. Their cross-section should equal from sixteen to twenty square inches at least for each scholar.

In ordinary school-rooms it is preferable to place both inlets and outlets on the same side of the room, namely, upon the inner or warm side. When so placed, the warm air should be admitted seven feet or more above the floor, and the foul air should pass out close to the floor.

Inlets and outlets should not be constructed with registers which occupy much space, but the opening should be covered with stout wire network.

To insure successful ventilation in all kinds of weather when mechanical means are not employed to move the air, it is necessary

to have means for artificially heating the foul air flue. This may be done by means of an open fire, by a small stove set into the base of the shaft, or by steam coils. In small buildings warmed with stoves or furnaces, the smoke pipe of the heater will usually furnish sufficient heat for this purpose. When thus heated the foul air flue should contain an iron pipe passing up its center, or in the case of double flues, set in the division wall, and into this the smoke-pipe should enter.

Instead of ventilation by heated flues, the air may be moved by mechanical means, that is, by fans run by any available motor.

Each furnace or steam heating apparatus should be supplied with a mixing valve or other arrangement by means of which warm air and cold air can be mixed in such proportions as is required.

Privies, Water-closets and Urinals.—Separate accommodations should be provided for the sexes, and for privies, entirely separate buildings are preferable.

For country school-houses without sewerage facilities, privies with dry earth arrangements, supplemented with a sub-surface drain to carry away the urine. The catch basin of the privy should be at the surface of the ground, instead of below the ground in the form of a vault.

Under no circumstances are privies in any form to be placed within or beneath the school building. The same interdiction applies to urinals without an abundant supply of water for flushing.

For cities where there are sewerage facilities and ample water supply exists there are two or three new designs of "water closet range" that are giving good satisfaction.

For separate water-closets for teachers use, the flushing rim short hopper with vented trap and exposed water seal are satisfactory.

Urinals that are constantly or automatically flushed are desirable.

Water closets and urinals should be made to allow complete inspection and use of the scrubbing brush.

Thorough special ventilation of that part of a school building set apart for water closets and urinals should be planned for.

The soil-pipe must extend beyond the fixtures in a short and direct line to an unobjectionable point above the roof.

Heredity of Tuberculosis.

In the last Congress for the study of tuberculosis, it was the opinion of Vignal that hereditary tuberculosis is extremely rare. In seventeen cases of inoculation in guinea pigs, he did not suc-

ceed in finding the bacilli in any of the organs of the young of highly tuberculous mothers. On the other hand Jacobi described a case of unquestionably congenital tuberculosis. Bernheim reminded that Landouzy had shown that tuberculosis is very frequent in and after the first year of life, and, as cases like this of Jacobi are so extremely rare, the cause of the prevalence of tuberculosis after birth must be due to infection. The disposition to tuberculosis and not the disease itself, is inherited. In childhood the food may be regarded as the source of infection; in later life according to Arthaud, the infection is derived in 80 per cent. of the cases from the infected dwellings. A short residence in such a house, rarely results in infection, but there is great danger from staying as long as a month.

Precautions Against Cholera by the U. S. Government.

Circular.—Vessels from Cholera-infected districts to be forbidden entry unless provided with certificate of disinfection.

TREASURY DEPARTMENT,
OFFICE SUPERVISING SURGEON GENERAL U. S. MARINE HOSPITAL SERVICE,
WASHINGTON, D. C., July 8, 1892.

To Collectors of customs, Medical Officers of the Marine Hospital Service, and others to whom it may concern:

The act approved April 29, 1878, entitled "An act to prevent the introduction of contagious or infectious diseases into the United States," provides that no vessel coming from any foreign port or country where any contagious or infectious disease exists, nor any vessel conveying infected merchandise, shall enter any port of the United States, or pass the boundary line between the United States and any foreign country except in such manner as may be prescribed under said act.

Information has been received that Cholera prevails in the Caucasus, in eastern European Russia, in Persia, in Calcutta, and on the western littoral of the Red Sea; and in view of the threatened further spread of the disease, and because of the danger which attaches to rags, furs, wool, hides, etc., which may have been gathered in the infected districts, and to articles of personal wear therefrom, it is hereby ordered, that no vessel having rags, furs, skins, hair, feathers, boxed or baled clothing or bedding, or any similar article liable to convey infection, hailing from any ports in the districts aforesaid, and no vessel from any port carrying the above mentioned merchandise or immigrants from the present infected districts or from districts that shall hereafter be officially

declared infected, will be allowed entry to any port in the United States unless provided with either a consular certificate or a certificate from a medical officer of the Marine Hospital Service, or State or local quarantine officer of the United States, to the effect that the vessel, cargo, personal effects, etc , have been disinfected in accordance with the methods herewith prescribed.

A—Disinfection of Vessels.

The disinfection of the vessel must be in accordance with the most efficient quarantine practice, and will be by one or more of the following methods:

a. Bichloride of mercury.

b. Sulphurous oxide.

c. Steam heat.

In addition to the above, thorough cleansing, flushing with sea water, etc.

B—Disinfection of Articles of Merchandise, Personal Effects, etc.

For the disinfection of the articles of merchandise, personal effects, etc., mentioned in the circular, one or more of the following methods will be used, all articles to be unbaled:

1. Boiling in water not less than one hour.

2. Exposure to steam not less than one hour, the steam to be of a temperature not greater than 115 degrees centigrade (239 degrees Fahrenheit) and unmixed with air.

All bedding and clothing must be subjected to method No. 1 or No 2.

3. Exposure not less than three hours to sulphurous acid gas, made by burning not less than three pounds of roll sulphur to each 1,000 cubic feet of space.

4. Exposure not less than six hours to an atmosphere containing 3 per cent. of sulphurous acid gas liberated from its liquid state (liquid sulphur dioxide).

5. Solution of carbolic acid of a 2 per cent. strength.

This method (No 5) may be applied *only* to leather goods, such as trunks, satchels, boots, shoes; to rubber goods, etc , the articles to be saturated with the solution.

Walter Wyman,

Supervising Surgeon General U. S. Marine Hospital Service.

Approved by direction of the President:

A. B. Nettleton,

Acting Secretary.

The Superior Board of Health of Mexico.

This board comprises seven physicians, with an ample number of skilled assistants, chemists, veterinary surgeons, and others. It was organized in 1870 with the establishment of the government of President Diaz. Ample appropriations have been made to carry on all its work. It commissioned two of its ablest members to travel through Europe and the United States to study sanitary questions and to collect all data possible relative to public works. These investigations were carried on for several years, and resulted in the forming of a public health code, which two years ago was enacted by the Federal Congress into a law.

This health code is the most extensive, comprehensive, and the broadest ever adopted by any government in the world, probably. The law is printed in one volume of 120 pages; it is divided into four chapters: Chapter 1, Maritime Sanitation; Chapter 2, Sanitation in Frontier Towns; Chapter 3, Sanitation in the States; Chapter 4, Medical Statistics.

To show something of the scope of the work, I will mention the subjects treated in the first chapter: Dwelling-houses and schools, food and liquors, churches, theatres, and other public meeting places, factories, industrial establishments, deposits, and other establishments which may become dangerous, unhealthy, or inconvenient to the country, sale of medicines and other substances of industrial use in drug stores and other similar establishments, the exercise of the medical profession in all its different branches, burials, exhumations and removal of bodies, infectious and contagious diseases, epizootia and sanitary precautions with respect to animals, dairies, slaughter-houses, and meat from the country, markets, garbage-dumps, public works effecting hygiene.

The work being done by this board is of unlimited value to the republic of Mexico. Dr. Eduardo Liceage, one of the ablest and most active physicians of the country, is at its head. The Veterinary Department of this Board is doing some important work in the investigation of animal diseases. It has a fine bacteriological laboratory in which a large amount of original work has been accomplished. Protective inoculations are being made and carefully studied. This department is under the supervision of Professor José L. Gomez.—Dr. Irving A. Watson, *Sanitarian*.

Diet and Drinks for Hot Weather.

Physiology teaches that during the heated term physical health and comfort may both be enhanced by proper regulation of the

diet. In a general way we might indicate this by the statement that it should be principally farinaceous and vegetable, including such fruits as the individual finds to agree with him. The amount of meat consumed, while not so great as in winter, should be governed by the activity of the individual and the muscular work actually performed; it should not be simply under the control of the appetite. Where active muscular exercise is neither required nor voluntarily performed, a very moderate amount of meat, at one meal in the day for instance, would be quite sufficient and all that would be desirable, while there is no question but that for some persons the better plan would be to follow a strictly vegetable regimen.

With due attention to diet, summer should be no more unhealthy than winter. The testimony of travellers in equatorial Africa and other hot countries is agreed upon the one point which is that, if we except certain notoriously miasmatic localities, a residence in the torrid zone is not necessarily unhealthy or unsuitable for Europeans, *provided* they adapt their habits and diet to the conditions imposed by the climate. The deadly climate of the tropics is only so to those persons who insist upon keeping up the habits of eating and drinking which might be tolerated in a temperate zone, but are, as Stanley has shown, absolutely fatal in hot latitudes.

This lesson is certainly applicable to the heated term in our North Atlantic States when the temperature approximates that of the tropics and the swollen mortality lists admonish us to be circumspect and to regulate our habits with due caution.

This is pre-eminently necessary in the case of young children. This truth should be insisted upon, that it is not the elevated temperature *per se* which carries off the babies, but the vitiated air, and especially the tainted food and infected milk upon which our city babies are expected to thrive, that are responsible for the fearful death rate. A single fact will illustrate this statement that it is not heat so much as it is other influences which babies are subjected to that are to be invoked as causes of this mortality. Bottle-fed babies are much more liable to succumb during the second summer than those which are nursed from the breast. This is generally acknowledged by every one. And yet the latter are kept much warmer than the former, because they spend much of their time in close contact with their mother's body. It should be taught with great positiveness that the great foe of infancy is cold

and not heat. All influences which tend to produce gastro-intestinal catarrh—whether they are connected with the food, such as unsuitable or indigestible, and especially irritating articles of diet, or internal congestions caused by chilling the surface by insufficient clothing or draughts of air—should be carefully avoided. The child should not be over-fed nor fed too frequently, and its food and clothing should be seasonable. If the milk has commenced the lactic fermentation (even though the acid reaction be not evident, owing to the addition of bicarbonate of sodium by the milk vender), it will be very apt to cause diarrhœa in infants who are fed upon it. The obligation, therefore, is most imperative to sterilize the milk, or at least to boil it and put it into a receptacle with a cover (such as a Mason fruit jar), and keep it in a cool place, preparing from this, each time, the amount of food actually required for the feeding. And especially is this necessary for young infants in our larger cities during hot weather. If this precaution be taken with regard to the diet, and the other hygienic measures provided, such as bathing and pure air, the second summer can be met without apprehension and its unfavorable reputation be disregarded. While it is true that infants may suffer from sunstroke, this never occurs where the child is properly cared for.

The lesson is not essentially different in the case of adults. The principles of dietetics for hot weather have already been indicated in a general way. Let every one for the time being fancy himself living in the tropics and govern his habits accordingly. The necessary avocations and demands of social life, as well as individual idiosyncrasy, must be taken into consideration in formulating a dietary for any given case, but it should always be more or less modified according to the time of the year.

Upon one point there is no disagreement among doctors. It is that in tropical climates the use of alcohol in any and every form is dangerous, and, if continued, in the end it is deadly. Dr. Parkes, in his report on the Ashantee campaign, was positive that the issue of a spirit ration while on the march was inadvisable, and Stanley confirms this and states further that even the use of light wines or beer is injurious. This is contrary to the almost universal custom during hot weather in this country, but there can be little doubt that health and longevity of our people would be favored by total abstinence from alcohol during the heat of midsummer, unless by direction of a physician or for distinctly medical purposes. Temperance in eating and in drinking should be especially observed at this time of the year, which, with due caution of this kind, can be made as favorable to health as any other season,—*Jour. of Balneology and Dietary.*

[FORM 46.]

TYPHOID FEVER.

ITS PREVENTION AND RESTRICTION.

(REVISED EDITION.)

Issued by the State Board of Health of Maine.

There is a pretty strong conviction in the minds of sanitarians and physicians that typhoid fever is a disease which has but little right to exist in a civilized community. Such thoughts regarding things inevitable and necessary are neither reverential nor profitable, but intelligently directed efforts to diminish the prevalence of typhoid fever have been followed by so large a measure of success that we are justified in regarding it as one of the *unnecessary* diseases.

The prevention of typhoid fever must rest very intimately on a knowledge of its cause, or, at least, on an acquaintance with the known laws in accordance with which that cause operates. The essential cause of this disease is generally believed to be a minute organic germ, which is given off by the sick, and may be transmitted to the well in several ways.

The infectious germ is not thrown off through the breath, nor in the exhalations from the skin, as is the case in some other infectious diseases; but in typhoid fever it is contained in the discharges from the bowels, and, as recent observations indicate, in that from the kidneys. **Hence the proper disposal of the excreta is a matter of the first and highest importance.**

Still another thing which experience seems to teach, and which the public should bear in mind, is that this fever-germ may be, not only developed, but multiplied outside the human body. That the fever patient is in some way a factory for the time being, engaged in producing and throwing off a posion dangerous to other persons, is a matter of common belief; but, of late years, there has come a settled conviction that this poison, or disease germ, as we now call it, may be, and very often is, developed and multiplied to a dangerous extent outside of the human body, when it is once introduced into places which present the favoring conditions of moisture, warmth, and filth. **Hence the vital necessity o care not to plant the dangerous seed in soil congenial to it.** Such dangerous localities about our homes are ill-kept water-closets, privies, cess-pools, drains, and earth which is saturated with uncleanliness.

The poison of typhoid fever may sometimes be received into the system by breathing it in; but, in undoubtedly the great majority of cases, the disease germ finds its way into the intestinal canal by means of food and drink. Reflection will show, and experience teaches, that there are many ways in which our food and drink may become contaminated with the germs. Some of the more frequent ways are these: The discharges are thrown into the privy or upon the ground, whence they soak, sometimes long distances, through the soil into the family well. The soiled clothes of the patient are washed, and the water carried by a loose and leaky drain which runs too near the well. Some kinds of food and drink are very absorptive of disease germs, and being kept too near the patient, become contaminated through the air. Many cases are known where milkmen, with fever at their own homes, have caused serious out-breaks of the disease among their customers, by keeping the milk, before it was distributed, too near the sick, by diluting it with contaminated water, or even rinsing the cans with the impure water.

So generally is typhoid fever regarded as due to polluted water, that, whenever this disease makes its appearence, we are justified in suspecting pollution of the water supply until the contrary can be pretty clearly shown.

PREVENTION.

What has already been said about the development of the typhoid fever germ and the ways it is taken into the system pretty plainly indicates the line of our endeavor in preventing it.

It is to be borne in mind:

1st. That filth, if it is not the direct cause, is at least the *nidus* (nest) in which the cause, or germ, may be developed.

2d. That the poison is principally given off from the bowels.

3d. That it is usually received into the system in the food and drink, particularly in polluted water.

1 At all times, as well in the absence as during the presence of typhoid fever, let us try to keep our premises and their surroundings as pure and clean as possible. Of all forms of filth none others are so dangerous to our homes as that of the "hole-in-the-ground" privy, and that in and about our sink drains. The former should never be tolerated, nor the latter, either, in its usual forms.

2. All discharges from the fever patient should be received in a vessel containing a pint or more of Solution A, Solution B, or Solution C, (see fourth page,) and kept covered by the disinfectant three or four hours, and then buried in the earth where they cannot by any possibility find their way into wells, springs, or brooks. **They should never be allowed to mingle with any kind of filth, in a privy or elsewhere.**

All clothing soiled with the discharges from the sick person should be immediately removed from him or from the bed. Disinfect carefully any spots on floor, carpet, or rug accidently soiled. The clothing, both of bed and patient, should be disinfected by dropping it into a tub containing several gallons of Solution C, or Solution E, and should be kept therein until it can be boiled. It is very important that this rule be followed strictly; otherwise the matter on the soiled clothing dries, becomes pulverized, floats in the air, and endangers the attendant. This suggests the reason why washerwomen often take typhoid fever from infected clothing. After the clothing is disinfected it may be washed with safty.

After death or recovery, disinfect the room with sulphur fumigation, followed with washing the floors and other wood-work with Solution A, Solution C, or Solution E.

3. As far as concerns the personal hygiene of nurses and attendants, it may be said that, if the foregoing preventive measures are carefully carried out, there is hardly a possibility of their taking the disease; in fact, under such conditions, cases in which the attendants have taken the disease from the patient are almost if not quite unknown. Typhoid fever goes through families because usually all have been exposed to the disease-producing cause; or the first cases contaminate the water supply, or "seed down" the privy vault and the house-surroundings with the disease germs.

Nurses and others in the family should eat nothing in the room where the patient is, nor anything which has been there. The food for the attendants and family should be prepared and kept as far from the sick as possible. Thorough boiling will kill all disease germs; so, while the fever is in the house, it is safer to boil all water and milk just before it is used.

DISINFECTANTS.

SOLUTION A.—For excreta, privy vault, woodwork and other surfaces.
SOLUTION B.—For excreta, privy vaults.
SOLUTION C.—For clothing, the hands, excreta, vaults, furniture and woodwork.
SOLUTION D.—For the person, the hands.
SOLUTION E.—For clothing, the hands, the person, excreta.
BOILING.—For clothing.—SULPHUR FUMIGATION.—For use only where liquid disinfectants cannot be used or to supplement other methods.

SOLUTION A.

Chloride of Lime,	6 ounces.
Water,	1 gallon.

Mix. Cost about three cents, or seventy-five cents a barrel. This is about a three per cent solution. (Decolorizes and destroys fabrics.)

SOLUTION B. "*Purple Solution.*"

Corrosive Sublimate,	2 drachms
Permanganate of Potash,	2 drachms.
Water,	1 gallon.

Mix and dissolve. Label, *Poison!* Cost, two or three cents a gallon, when the chemicals are bought by the pound. (Stains fabrics, etc.)

The permangante of potassium in this solution is used to give it color as a precaution against mistakes. It also, in this quantity, increases the deodorizing qualities of the solution. This is approximately a 1:500 solution of the sublimate; therefore, mixed with an equal quantity of water or liquids to be disinfected, it gives us a 1:1000 mixture. One ounce of this solution contains very nearly one grain of the corrosive sublimate.

SOLUTION C. "*Blue Solution.*"

Corrosive Sublimate,	4 ounces.
Sulphate of Copper,	1 pound.
Water,	1 gallon.

Mix and dissolve. Label, *Poison!*

This is sixteen times stronger than solution B. and is intended as a standard solution from which, by dilution with water, a solution of the proper strength for use may be made. To make from it a solution of the proportion of

1:500, add 8 ozs. to 1 gallon of water.
1:1000, add 4 ozs. to 1 gallon of water.
1:2000, add 2 ozs. to 1 gallon of water.

SOLUTION D.

Labarraque's Solution,	1 pint.
Water,	1 gallon.

Mix. Cost about twenty-five cents.

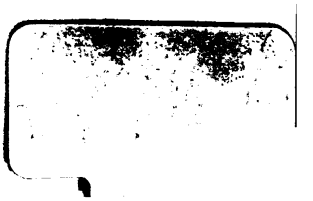
SOLUTION E.

Carbolic Acid, (90 per cent,)	7 ounces.
Water,	1 gallon.

Mix. This is approximately a five per cent. solution, or in the proportion of 1:21.

Sulphur Fumigation. To use this effectively three pounds of sulphur should be burned in a room ten feet square. Every opening into the room, flues, doors, windows, cracks and crevices, must be closed, except the door by which the disinfector is to escape. The sulphur is to be burned in an iron kettle or other vessel set in a tub containing a little water to guard against fire. Ignite the sulphur with a few live coals or with a little alcohol or kerosene and a match. Leave the room quickly, for the fumes are highly poisonous when breathed, and close the door tightly. Let the room remain closed twenty-four hours or more. Then air thoroughly for several days.

Boiling for at least half an hour is a sure way to destroy infection. Immersion in Solution C (1:2000) or in Solution E, one-half strength, will lessen the danger from infected clothing until it can be boiled.

1 gal

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